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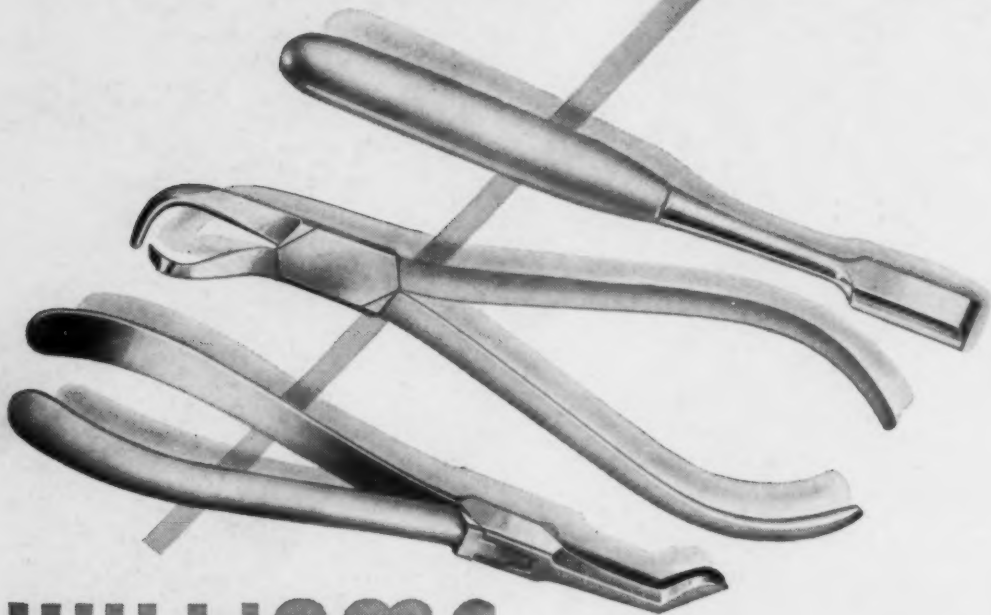
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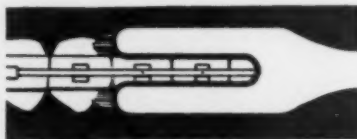
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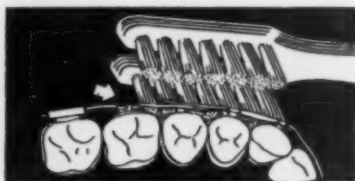
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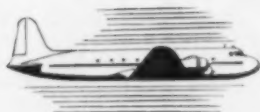
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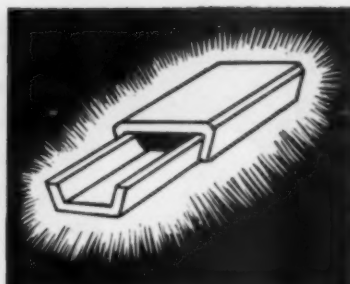
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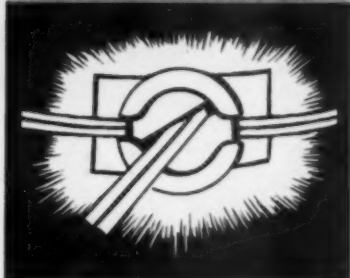
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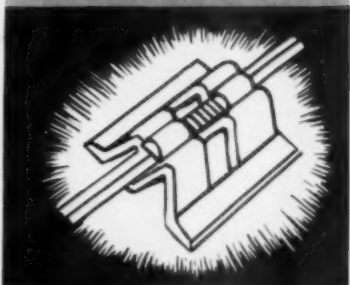
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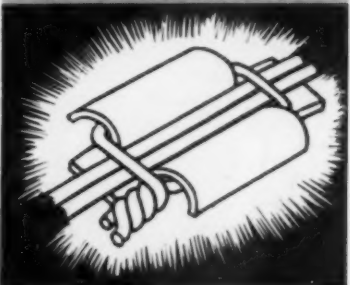
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VOL. 39

APRIL, 1953

No. 4

Original Articles

PRESIDENT'S REPORT, MIDDLE ATLANTIC SOCIETY
OF ORTHODONTISTS

GEORGE M. ANDERSON, D.D.S., BALTIMORE, MD.

THE Middle Atlantic Society of Orthodontists, long under consideration and approved by the American Association of Orthodontists in 1950 as a component, organized in 1951 and presented its first scientific session, May 19, 1952, in Philadelphia. The events of that day and the efforts preceding it should leave no doubt in the mind of anyone that the charter members intended that the foundations of the Middle Atlantic Society should be laid in a manner to benefit those within our geographical boundaries who serve the public through the dental profession by means of an orthodontic practice. As a sequence we have high hopes that what we do locally will redound to the welfare of all the health groups and through them to the children it is our privilege to serve. Few groups have had a more sincere and determined effort to come into being and once this had been accomplished there has been no lessening of interest or desire for a well-organized and useful society.

While a list of orthodontists from within the boundaries of the Middle Atlantic Society indicated a good potential membership, we had no sure way of knowing what the starting group might total. We most certainly came up to every reasonable expectation at the beginning, and within the past few months have shown a satisfactory increase in applicants so that at the moment we can report that numerically we have nothing to concern us. Our finances, however, were and still are on the low side and will be so until we do something about them. In order that we might function to best advantage our working capital had to be supplemented by voluntary contributions from some of our members so that our treasury balance could present a respectable sum.

That is not the answer to the problem, more about which I shall speak later. The most cheering element from what we were able to do has been the approbation of those who have known about and watched our creative efforts. We are as individuals and as an organized group sincerely appreciative

Presented at the annual meeting of the Middle Atlantic Society of Orthodontists, Atlantic City, N. J., Oct. 21, 1952.

of the good will and active support of many orthodontists, and to those who exceeded our expectations of support and never failed us we are most grateful. Without them we would not be here.

We, also, are grateful to the Northeastern Society for the fine gavel suitably banded in silver and inscribed which was presented to the Middle Atlantic Society at the start of our first official year. The thoughtfulness which prompted the gift and the manifested good will evidence a spirit of cooperation between neighboring societies which speaks well for the future activities of both groups.

The organization of a distributed group of people into a working unit in a short period is not a simple matter. A great deal must be accomplished by letter writing and telephoning and important issues must be delayed until a suitable time can be found for a decisive meeting. That is why at the close of the first year, even though we have been able to have numerous Sunday Executive Committee meetings, much remains to be done in order that the Middle Atlantic Society will meet the standards you expect in organization, operation, and specialty prestige. The work of our Secretary, Dr. Devlin, has been of the highest order. He has provided us with agendas from which no important item has been left out, and in keeping our records, financial accounts, and correspondence up-to-date he has aided us under geographical difficulties to meet our numerous responsibilities with a considerable degree of order and good effect. We have been fortunate in the choice of our Secretary-Treasurer.

As an example of complications and adjustments to be found in matters even in which most of us have had reasonable experience, I refer to the Constitution and Bylaws under which we plan to operate. At first we thought—and this was before the Constitution Committee was appointed or organized—that we might develop a skeleton to which as time and needs indicated we might add the necessary parts. As that idea was pursued we found that the skeleton put on weight and that we were going to have a Constitution which would be extensive and yet would not include many considerations which would have to be answered. So then we changed our tactics and believing that most members had knowledge of the constitution of the Northeastern Society we felt that it should do well by us. But that group had changed and added to its constitution and had no full printed form so that we were confused in trying to piece together the many changes and additions. Fortunately by this time we had a Committee on Constitution which took its work seriously and we are much indebted to Dr. Shehan as Chairman and Drs. Yerkes, Ackerman, and Lloyd. As time progressed and the problem was further studied it was found that the Southern Society had revised and reprinted its constitution, and while parts of it were not as we wanted we did have the experience and authority of that Society as a foundation with which our Committee could work. To Dr. Shehan in particular I express my personal appreciation for the work he has done, and to the Committee I also say that within the limits of a distributed committee's ability to cooperate, they have done well, and to them we are most grateful. But the job is not

done, and you should read and study your document and note changes which seem appropriate and bring them to the attention of your Constitution Committee so it may study what you suggest and make recommendations to future business sessions for action.

For instance, there is the matter of associate membership. We have a different attitude toward this issue than does the Northeastern Society for we require a man or woman to be in exclusive practice and the Northeastern Society does not. As an example, an individual within our boundaries found that there was a question as to his exclusiveness and that he did not meet our standards so he applied for an associate membership in the Northeastern Society. In addition, we must face up more definitely the time period during which one may be an associate member and what is to happen to him or her when the associate membership does not carry through to active membership. The associate is now dropped automatically at the end of five years of associate membership if he does not carry through to active. Is that what is considered best or do you wish some other provision?

Another problem is that of a nominating committee. We have thought that for the present we are a small society and from the floor could function to satisfactory selection of officers. Recommendations for the various committees now come from the Executive Council which considers the duties of each position and the person who seems best to fit the requirements. In effect this is a nominating committee as far as election of committee members go though further nominations can be made from the floor. I have not been too cordially inclined to a nominating committee and my opinion has been based on observation of how they sometimes work. There are two sides to them and they can work well and they can have poor results. It is a subject which members should think about so that if they are asked to consider the issue it will not be approached without sufficient understanding.

The very lifeblood of a Society and the real benefits to its members come through the scientific programs. The demands of the specialty and profession today are great for varied is the training of the members and equally varied are their desires. Once again the manner in which a program committee can function when its members are unavailable for the frequent and important conferences so essential to the development of a program presented a difficult problem. Dr. Preis has done well for us; his selected essayists have been men of note and real stature in our field and the subjects they have discussed have been timely and sound in principle. I know very well the efforts he has made and the cooperative manner in which Drs. Murray, Reid, and Giblin have responded to the needs of the moment when issues and local arrangements had to be settled. On behalf of the Society and from me personally I express our gratitude and acknowledge that the assistance of Dr. Preis and his Committee has made possible for us programs of real character and instruction. We have not, as you have seen, arranged clinics for we believed it better not to attempt too much in our earliest days. We believe fully in the value of clinics and while we have no authority to speak for the future,

we feel sure that clinics will assume an important place in our future schedule of instruction.

Though I have spoken without too much insistence to some of our officers and members about the level of our dues, I now bring to your serious consideration our financial problems. As a component of the American Association of Orthodontists we make a dues payment to its Treasury and when that is added to our own dues it seems to make up to a good total sum. But actually what the Middle Atlantic Society has to work on is \$10 per year plus a bit from initiation or admission charges. A membership of 75 does not give us a very large sum. It is not enough to arrange for a one-day spring meeting and a two-day fall meeting if we are to have essayists from any distance, and even if near-by essayists are used so as to lessen traveling expenses we find that hotel accommodations are costly. Hence I suggest that you think seriously about what we must have if we are to face our responsibilities and be what we know we should be as an active Society. The expenses for this meeting are about equal to the sum total of our income from dues for this entire year. The cost of the spring one-day and the two-day fall meetings and ad interim operating expenses total about \$1,200 to \$1,400. There have been no extravagances, and though we have had several meetings of the Officers, Executive Committee, and other committee members during the past year we have not allowed any expense incident thereto to be borne by the Society. Even so, in order to have working capital we accepted voluntary contributions from members of nearly \$1,000 in order that our bills could be paid promptly and a small sum be available for contingencies. We will never be what we ought to be if we are worried by lack of funds and we shall not be able to do our job if we have to depend on the generosity of members both in meeting incidental expenses and in maintaining working capital. So I suggest that our Budget Committee (which is being elected at this meeting for the first time) undertake to assess our needs and tell us what we must do to finance adequately an active and solvent organization.

Though we have an Education Committee, it had no duties during this year because it was late in being appointed. Though certain matters might well have been referred to it I did not pursue them because other duties were a bit more pressing. However, I feel your attention should be called to a communication which I received recently and which represents a matter we must think about.

The communication reads as follows:

We have set our organization up whereby we restrict the opportunity for anyone seeking information to those who exclusively practice orthodontics. Now you know there are men in general practice who can attempt, and have done so, some corrective work in tooth alignment. This might be due to their enthusiasm for the work or by virtue of location. It is true that some may abuse the limited amount of knowledge they have with disastrous results, but on the other hand there are others who can make some moderate corrections which are of great benefit to these little patients.

Some thirty or forty years ago there was a cry for government regulations which would restrict Big Business from having too much control. The anti-trust laws resulted. There was a period when little was heard from such suits but today we find them being

brought against not only corporations but the professions. Inasmuch as we exclude a man who holds a dental degree (and by virtue of this degree may practice any of the dental specialties) I have begun to wonder if we are not jeopardizing ourselves by restraining one interested in our particular field from advancing himself. Of course, if there were State Boards for the specialties there would be no reason to give this matter consideration. I don't know the answer but I think we should consider well and perhaps initiate in the meetings held by the various states which comprise our Middle Atlantic Society clinics at their respective sessions where anyone interested might obtain some information.

The letter continues, but I believe I have quoted enough to indicate that here is a problem which our Education Committee might well consider. As I see it the letter does not suggest that we hold these clinics in the meetings of the Middle Atlantic Society but that we do so through the dental meetings held in our respective states and the District of Columbia and that we, as members of the Middle Atlantic Society, make it known that what we do is a service from our Society to the general dental profession and those in particular who profess an interest in orthodontics though not specializing in the field. I suggest that the Committee on Education inquire into this matter and make further comment on it as to the course we might follow.

Our relations with the parent body, the American Association of Orthodontists, were cordial and mutually satisfactory because we were ably represented in the business sessions by Dr. Rosenast, our Director. The first year is not an easy one and requires care in speech and action. Information that has come to me since that St. Louis session speaks well for the way our Director represented us and we are fortunate indeed to get off on such a fine start.

We had the good fortune to have as a charter member a friendly, competent, gracious person, Abe Wolfson, who aided in our organization work and who on the illness of Dr. Swinehart assumed the duties of Chairman of our Board of Censors. Unexpectedly and unfortunately we lost through death the services of Dr. Wolfson and his absence will be felt for his opinions were sound and his advice worth accepting. I personally cannot say too much or in too heartfelt manner as to my feeling about his passing. Our officers were most cooperative at the time of Dr. Wolfson's death in expressing in my absence the condolences of this Society. Since that time our Editor, Dr. Hopkins, prepared suitable resolutions and an In Memoriam for inclusion in our records; a copy went to our official JOURNAL, appearing in the December, 1951, issue, and to the family of Dr. Wolfson. May I ask that all of you in the next silent moment think of this kindly and able person who is no longer with us.

I sincerely hope as I turn over the duties which you entrusted to me a year ago that all officers, committeemen, and members, who in greater or lesser degree gave me advice and help, will realize that if in some measure this Society has benefited from my tenure of office they have had a real part in my effort to be worthy of your confidence.

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AN ANALYSIS AND DISCUSSION OF ORAL CHANGES AS RELATED TO DENTAL OCCLUSION

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THIS presentation consists mainly of serial studies from birth which reveal changes under varied conditions. First I shall describe some of the early changes that take place preceding dental occlusion. At birth there is no contact between the gum pads whether the jaw is at rest or in function. This statement is based on evidence obtained by observation, measurement, and lateral x-rays of the newborn. The anteroposterior relationship of the gum pads was determined by measurements of over a hundred sets of casts of newborn children which were articulated by means of individual bites. These bites were taken in a partly closed position of the jaws. Multiple wax bites of the same newborn child taken under similar conditions had variation of plus or minus 1 mm. for this procedure. It was found that the newborn child with a range of 0 to 8 mm. subsequently developed a good or poor occlusion. The greater the extent of the posterior relationship of the lower dental arch, the greater was the possibility of the child developing irregularities of teeth. Of over 1,600 babies examined, four babies had a posterior relationship of more than 8 mm. Three of them died within the first month. They all had great difficulty in feeding and breathing, and manifestation of the sucking reflex was practically absent.

Our study revealed that there was little or no anteroposterior movement of the mandible at birth. This movement was developed with the eruption of the incisors. With the advent of the first deciduous molars, the lateral movements of the mandible were then developed.

There is a greater relative rate of change of the lower dental arch as compared with the upper up until the time when the first deciduous molars erupt. About this time a child has a relatively mature relationship of the dental arches, and comparisons can be made with the later periods of occlusion as classified by Angle. In my opinion with the facts known at present the future occlusion of the infant cannot be predicted at birth. One can get some general ideas as to size, shape, and asymmetry which may have some bearing on the future development. If future occlusion could be predicted at birth, then our search for etiologic factors would be delimited.

Changes of ontogenetic development of occlusion may be divided into four categories: (1) a good dental occlusion exists throughout; (2) a poor dental occlusion exists throughout; (3) a poor occlusion is present early but evolves into a good occlusion; (4) a good occlusion is present early, but evolves into

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a poor occlusion. This grouping can be illustrated by these examples. Child R. A., category 1, had a good occlusion from the first deciduous molars to the second permanent molars. Child C. D., category 2, had a Class II relationship from the time of the eruption of the first deciduous molars which was maintained to the permanent dentition. Child P. D., category 3, had a poor occlusion in the deciduous dentition consisting of a cross-bite of the molars and a marked opening between the incisors, with no observable habits. However, the occlusion became good with the eruption of the permanent dentition. Child C. M., category 4, had an apparently "good"* occlusion in the deciduous dentition. With the advent of the permanent dentition the occlusion changed to a Class II with a 12 mm. horizontal overbite of the incisors. She had no accountable habits responsible for this change. Most of our children belong in categories 1 and 2, which suggests that the etiology of certain aspects of their occlusion was present early in life.

Let us analyze the changes of occlusion, spacing, rotation, and crowding of 38 children of a random group of 60, who were followed from birth to the development of permanent dentition including the second molars. In this group there were 18 good occlusions and 20 poor occlusions, as recorded by their last records. Each group was subdivided into deciduous, mixed, and permanent periods.† From the cast of each period (Tables I and II) the class of occlusion, the number of spaces between teeth, rotations, and crowding of teeth were tabulated. A comparison of spaces was made for each period by counting the spaces between all deciduous teeth or their successors in the dental arches. Therefore, the maximum number of spaces that could exist for each period would be 18. Rotations of the deciduous teeth were usually slight, appeared upon eruption, and remained relatively unchanged regardless of the presence or absence of spacing between teeth. Table I for good occlusion shows two children who had poor occlusion in the deciduous period. Child C. F. had a definite Class II while Child A. A. had a "Class III tendency." During the mixed dentition child C. F. retained a poor occlusion. In the permanent dentition all children had good occlusion. The maximum number of spaces was 17 in the deciduous period, 9 in the mixed, and 11 in the permanent. There was a total of 161 spaces in the deciduous dentition, 43 in the mixed, and 65 spaces in the permanent dentition. In the deciduous period there was only 1 rotation and no crowding. In the mixed period there was again 1 rotation and 3 crowded teeth. In the permanent dentition there were 2 rotations and crowding increased to 5.

Table II of poor occlusion presents a different picture. During the deciduous period there were 5 children with good occlusion, 6 with Class I, and 9 with Class II. In the mixed dentition, there was 1 good occlusion, 7 Class I's, and 12 Class II's. In the permanent dentition there were 9 Class I's and 11 Class II's. The maximum number of spaces for the deciduous period was 16, while there were 7 spaces for the mixed and permanent dentitions. The

*Good occlusion recorded in the deciduous dentition may be questioned in retrospect.

†Deciduous period, two years to four years approximately.

Mixed period included permanent incisors and first permanent molars; five and one-half to eight years approximately.

Permanent period, all permanent teeth to second molars; twelve to fifteen years approximately.

TABLE I. ANALYSIS OF GOOD OCCLUSION

CHILD	SEX	DECIDUOUS DENTITION				MIXED DENTITION				PERMANENT DENTITION			
		O	S	R	C	O	S	R	C	O	S	R	C
S. L.	M.	G.	5	*		G.			*	G.			
C. F.	F.	II	16			II	1			G.	10	*	
S. D.	M.	G.	10			G.	4			G.	9		
A. D.	F.	G.	10			G.	4			G.	8		
F. D.	M.	G.	5			G.	4			G.			
A. A.	M.	III	8			G.				G.			
L. D.	M.	G.	2			G.				G.	1		
B. H.	F.	G.	7			G.		*		G.	5		
D. M.	M.	G.	9			G.			*	G.			*
P. H.	M.	G.	2			G.			*	G.			*
E. H.	F.	G.	12			G.	9			G.	5		
R. A.	M.	G.	13			G.	3			G.	5		
C. B.	F.	G.	1			G.	3			G.		*	*
D. B.	M.	G.	8			G.	3			G.			*
L. A.	F.	G.	8			G.	1			G.			*
F. L.	M.	G.	17			G.	7			G.	11		
P. L.	F.	G.	12			G.	3			G.	7		
J. A.	M.	G.	16			G.	1			G.	4		

total number of spaces for the deciduous dentition was 120, 30 for the mixed, and 33 for the permanent. For all three periods, there were 9 rotated teeth, while crowding increased from 6 to 9 to 12 for each period.

In general the closing of spaces in the good occlusion improved the bite, while in poor occlusion it generally increased the degree of the irregularities. Rotation and crowding were of little significance in the cases of good occlusion, while these factors were accentuated in poor occlusion. In individual cases, good or poor bites could be found irrespective of the factors considered. All but two children with good occlusion belonged to category 1, while the children with poor occlusion belonged to categories 2 and 4. The poor occlusions seemed to be more variable as to their development of occlusion, rotations, and crowding.

TABLE II. ANALYSIS OF POOR OCCLUSION

CHILD	SEX	DECIDUOUS DENTITION				MIXED DENTITION				PERMANENT DENTITION			
		O	S	R	C	O	S	R	C	O	S	R	C
F. S.	M.	II	6	*	*	II		*	*	I		*	*
J. E.	F.	I	4	*	*	I				I	2	*	*
A. V.	F.	II	6			II			*	II	1		*
S. V.	F.	II	5			II			*	II	7		
R. D.	M.	II	16			II	5			II	4		
L. R.	F.	G.	2			I		*		I		*	
J. A.	F.	II		*		II		*	*	II		*	*
J. B.	F.	G.	9	*		II	3	*	*	II			
C. B.	F.	I	7			II	7	*		II			
S. D.	F.	II	9			II	1	*	*	II		*	*
A. D.	F.	G.			*	I		*	*	I		*	*
A. R.	F.	II	10			II	3			II	4		*
E. R.	F.	II	7	*		II	1	*	*	II	2		*
A. F.	M.	G.		*	*	I	2			I		*	*
J. S.	F.	I	10			I	2			I	2		
K. C.	M.	I	3	*	*	II		*	*	II		*	*
B. C.	M.	II	14	*		II	2			II			
P. C.	M.	I	4	*	*	I				I		*	*
M. F.	F.	G.	2			G.				I			*
L. S.	F.	I	6			I	4			I	4		

Dental arch change for the different dental periods can be represented by dimensions and ratios of Child R. A. (Table III). Of course, these figures will vary with each individual. Nevertheless, they do illustrate the idea of change. The table consists of the lengths and widths for both arches and their ratios calculated with the birth dimension as a base. The anterior length ratio for both upper and lower arches is 2.2 for the permanent dentition. The molar length ratios are 1.14 and 1.39 for the upper and lower arches. The anterior width is 1.56 for the upper and 1.63 for the lower arch. On the other hand the molar width is 1.9 for the upper and 1.4 for the lower arch.

TABLE III. RATIOS OF CHILD R. A.

	UPPER					
	ANTERIOR LENGTH	MOLAR LENGTH	TOTAL LENGTH	ANTERIOR WIDTH	TOTAL WIDTH	MOLAR WIDTH
Birth	1 (7.2)	1 (26.5)	1 (26.5)	1 (23.6)	1 (23.1)	1 (23.1)
Deciduous dentition	1.67 (12)	1.06 (27.5)	1.35 (36)	1.3 (30.6)	1.64 (38)	1.47 (34)
Mixed dentition	1.87 (13.5)	1.07 (28.5)	1.64 (43.4)	1.46 (34.5)	1.82 (42)	1.81 (41.8)
Permanent dentition	2.2 (16)	1.14 (29.2)	2.03 (54)	1.56 (37)	1.9 (44)	2.0 (47)
	LOWER					
	ANTERIOR LENGTH	MOLAR LENGTH	TOTAL LENGTH	ANTERIOR WIDTH	MOLAR WIDTH	TOTAL WIDTH
Birth	1 (5)	1 (18)	1 (18)	1 (18.4)	1 (28.4)	1 (28.4)
Deciduous dentition	1.66 (8.3)	1.33 (24)	1.93 (34.8)	1.35 (25)	1.19 (34)	1.3 (37)
Mixed dentition	1.8 (9)	1.35 (24.4)	2.11 (38)	1.51 (28)	1.35 (38)	1.57 (44.5)
Permanent dentition	2.2 (11)	1.39 (25)	2.6 (48)	1.63 (30)	1.4 (40)	1.77 (50)

From this table we can see that not only do the arches change in size, but also in morphology. Although some of these changes in ratios may appear small, the differences of dimensions were significant.

Changes of occlusion due to forceful habits such as thumb-sucking have been reported. It seems that the effect may be different in children with underlying good occlusion and those with poor occlusion. At least, this applies to the children in my study and needs further investigation.

At times habits may be multiple even in older children. For instance, child D. W., who was a thumb-sucker from infancy, had a callous formation at the middle of the second phalanx. The trauma to the thumb was not due to sucking, but was the result of a distinct biting process. At 9 years, 8 months, lateral x-ray shows the position of the thumb while sucking (Fig. 1, A) and the other x-ray shows the thumb inserted at a different angle while biting (Fig. 1, B). The sucking was a passive force while the biting was an active force. No displacement of the teeth was noted.

A differentiation must be made between the changes brought about by normal development and those produced by habits. When there is underlying poor occlusion present it may be difficult, even with serial models, to make a

A.



B.

Fig. 1.—Lateral x-rays of child D. W.; *A* shows position of thumb while sucking; *B* shows position of thumb while biting.

quantitative distinction between developmental changes and those due to habit. When a child with serial good occlusion throughout shows no effect from varied habits, one must then look for other reasons.

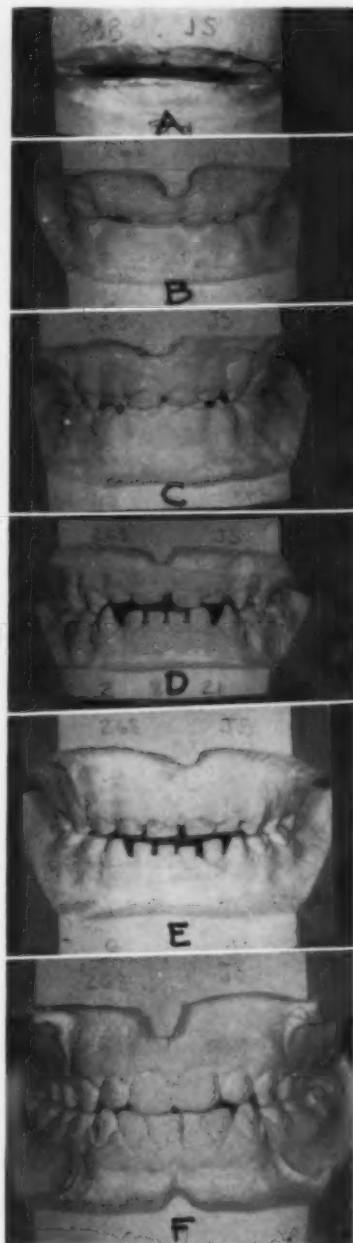


Fig. 2.—Serial casts of child J. S.; shows possible effect of disease.

- | | | |
|-----------------------|---|--|
| A, Birth | } | Good dental development. |
| B, 1 year, 6 months | | |
| C, 1 year, 9 months | | |
| D, 2 years, 9 months | } | Open-bite with no habits accountable for same. |
| E, 6 years, 3 months | | |
| F, 14 years, 7 months | | |

The same may be said for a child whose occlusion was apparently not affected by illness. In addition to the usual childhood diseases, Stephen had large infected tonsils and adenoids. He had to protrude his mandible in order to breathe. At 7 years his tonsils and adenoids were removed. From birth to 14 years, Stephen had a good dental development throughout his entire series. This was also true of his two siblings who were studied from birth. Four other members of his family also had good occlusions.

On the other hand, John may lead us to a different conclusion. At birth he had an infectious nasal discharge (Fig. 2); at 1½ years he had acute tonsillitis; at 4 years and 5½ years he had enlarged cervical glands with chronic infection of his tonsils and adenoids; at 6½ years he was acutely ill for one month with pneumonia in addition to infected tonsils and adenoids. At 11 years his adenoids and tonsils were removed. His casts from birth to 1 year, 9 months show a good dental development. However, from 2 years, 9 months to 14 years, 7 months, an open-bite was present. This child's history suggests the possible effect of disease upon occlusion.

With our present methods of study, the subtle changes which cannot be measured adequately may escape our notice. Future refinements of technique may supply the necessary means for a more accurate evaluation.

The posterolateral sulcus is an anatomic landmark for noting change of the dental arch. The direction and length of this sulcus varies with time. At birth its course is oblique at approximately 45 degrees to the sagittal plane in the upper jaw, while it is obscure in the lower jaw. Prior to eruption of the first permanent molar, however, this sulcus follows the outline of both dental arches. It presents a similar picture prior to the eruption of the second molar. At 15 years it may be seen as a short landmark at less than right angles to the sagittal plane. It runs inwardly in the upper jaw and outwardly in the lower jaw. As the gum pad area enlarges with time, this sulcus resumes a more parallel position. It defines the limit of the total arch length. Its direction and length may be indicative of the good or poor formation of the dental arch. It gives a clear demarcation between the soft, vascular tissue on its buccal aspect, and the hard, less vascular tissue on its lingual aspect. This should be of importance to the surgeon because of the difference in healing quality of these tissues. It is also of interest to the prosthetist because of the difference of tissue-bearing qualities.

Particular interest has been expressed recently about the period of the deciduous dentition. The pattern of spaced or nonspaced deciduous arches is present upon eruption of teeth and appears to remain relatively unchanged with time. However, changes in spacing can be observed. To evaluate the changes of dental arches by this factor alone is likely to be misleading because of the difficulty of measuring subtle changes. Change must always be considered in a spatial sense.

Over 100 sets of casts with complete deciduous dental arches were analyzed, revealing that change took place in all of them. This can be visualized by taking serial sets of casts of the completed deciduous dental phase at different ages, and articulating the upper cast of the older age with the lower

cast of the younger age. Marked changes will be observed in the dentition whether there are spaces between teeth or not. In some instances the changes are so great that the upper arch overhangs the lower, with changes mainly



Fig. 3.—Serial casts of child M. F. illustrating occlusal changes.

- A, Birth
- B, 1 year, 8 months
- C, 2 years
- D, 5 years, 3 months
- E, 6 years, 7 months
- F, 7 years, 8 months
- G, 9 years, 7 months
- H, 11 years, 10 months
- I, 13 years, 1 month
- J, 14 years, 8 months

Note developmental reduction in horizontal overbite.

Note loss of arch continuity due to dental caries.

Note changes in occlusion.

Note closure of space.

Note further closure and molar relationship.

Note spontaneous correction of molar relationship.

Note broken-down upper first permanent molar with abnormal increase in overbite.

Same as above with further impairment of occlusion.

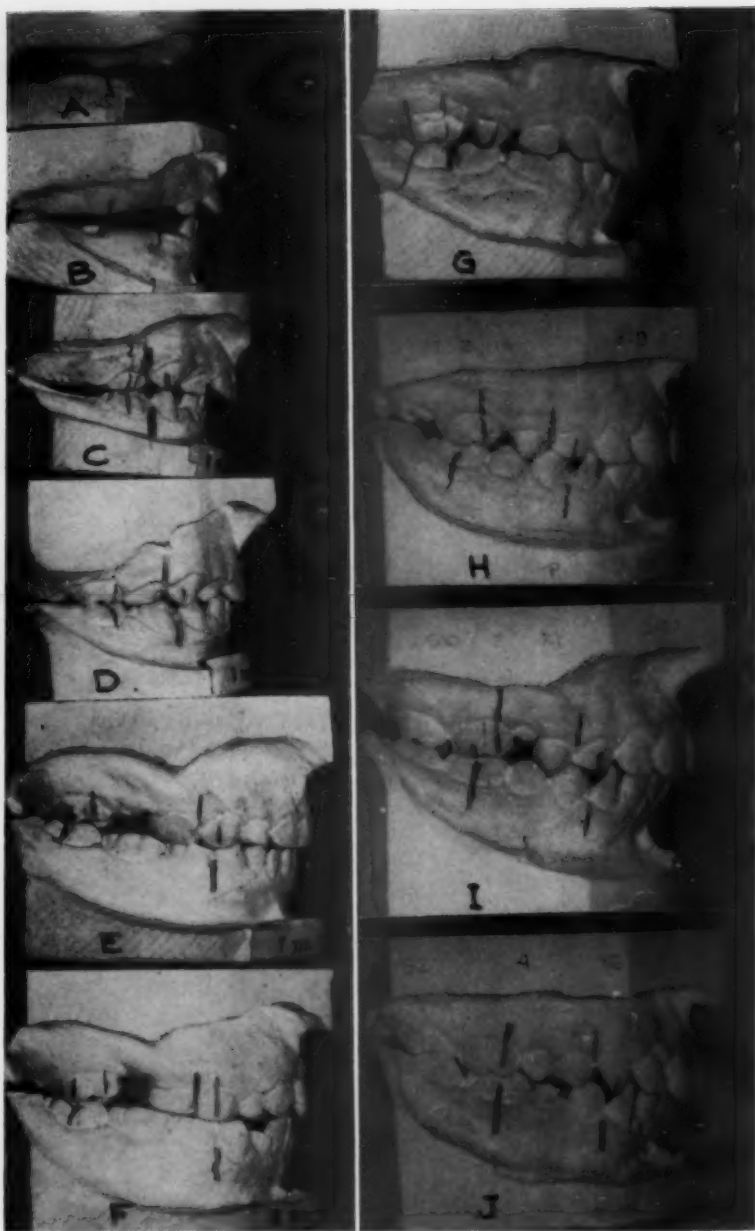


Fig. 4.—Serial casts of child P. C. illustrating occlusal changes.

- A, Birth
 B, 1 year, 2 months
 C, 2 years, 1 month
 D, 3 years, 2 months
 E, 7 years, 2 months
 F, 8 years, 1 month
 G, 10 years, 0 month
 H, 12 years, 0 month
 I, 13 years, 0 month
 J, 15 years, 1 month

Note posterior position of lower dental arch.

Spontaneous correction of anteroposterior relationship of dental arches. Note lingual position of upper lateral incisor and first deciduous molar.
 Spontaneous correction of the lingual position of teeth and broken-down molar.
 Closure of space of upper second deciduous molar.
 Further impairment of occlusion with mesial tilting of upper first molar and distal tilting of upper first premolar.
 Further closure of space.
 Eruption of upper second premolar with improvement of occlusion.

occurring from canine to molar. In others, changes were noted only in the canine or anterior region. Not only were there changes in size, but changes in morphology were also evident.

The premature loss of deciduous teeth offers further opportunity for study of some aspects of change in the dental arches. The second deciduous molar has been singled out to be the most serious offender in causing malocclusion. Since this tooth seems to be the one of greatest concern, let us analyze a case where there was loss in the lower arch (Fig. 3) and a loss in the upper arch (Fig. 4). Child M. F. lost the lower second deciduous molar (Table IV) which had a mesiodistal diameter of 9.5 mm., and with time the space closed to 3.5 mm., a loss of 6 mm. Nevertheless, the second premolar erupted spontaneously into the arch with good alignment, and improved the occlusion. To understand these changes a few pertinent casts were selected for measurement.

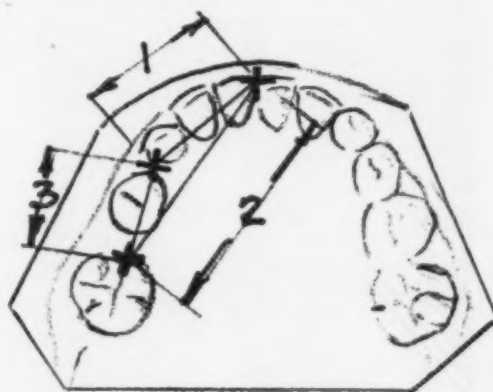


Fig. 5.—Occlusal views of dental arch showing dimensions 1, 2, and 3.

Fig. 5 shows:

Dimension 1, taken from the incisal point to the distal aspect of the canine.

Dimension 2, taken from the incisal point to the mesial aspect of the first permanent molar, or the distal aspect of the deciduous second molar.

Dimension 3, taken from the canine point to the same molar point.

Table IV shows that dimension 1 had an increase of 1.2 mm. from 3 years, 8 months to 14 years, 8 months, while dimension 2 had a decrease of 1.4 mm., and dimension 3 a decrease of 3 mm. within the same time.

TABLE IV. CHANGE OF DIMENSIONS WITH PREMATURE LOSS OF LOWER SECOND DECIDUOUS MOLAR IN CHILD M. F.

AGE	DIMENSIONS		
	1	2	3
3-8	15.0	29.4	16.8
9-7	15.8	27.8	11.8
10-7	17.0	29.0	13.7
11-10	16.4	28.5	13.8
13-1	16.0	28.0	14.0
14-8	16.2	28.0	13.8

Child P. C. lost his upper deciduous molar which had a mesiodistal diameter of 9.5 mm. (Table V). The space closed to 0.8 mm. with a loss of space of 8.7 mm. Here, too, the second premolar erupted spontaneously into the dental arch, and improved the existing poor occlusion. From 3 years, 9 months to 15 years, 1 month, dimension 1 increased 2.4 mm. while dimension 2 decreased 1.1 mm., and dimension 3 decreased 4.6 mm. Both of these examples have a similar pattern of change. Of course, this will not happen all the time. It will happen when favorable factors exist. How to appraise these factors so as to be able to predict whether or not this change will occur depends upon our understanding of the problem as a whole. Serial records are most helpful for an evaluation and to temper prediction.

TABLE V. CHANGE OF DIMENSIONS WITH PREMATURE LOSS OF UPPER SECOND DECIDUOUS MOLAR IN CHILD P. C.

AGE	DIMENSIONS		
	1	2	3
3-9	20.8	36.4	17.6
8-1	21.8	32.4	13.1
12-0	24.4	32.0	8.2
13-0	23.7	33.5	10.3
14-0	23.9	36.0	13.2
15-1	23.2	35.3	13.0

Under certain conditions premature loss of deciduous teeth does predispose their successors to rotations, and thereby affects the occlusion. Also soft tissue changes take place which cannot be controlled and which may affect the position of any tooth. For example, child P. H. lost the upper first deciduous central incisor prior to 2 years, 3 months (Fig. 6). At 7 years, 8 months, the incisal papilla and labial frenum were deflected 4 mm. from the median line. The permanent incisor which succeeded the lost tooth was retarded in eruption and deflected from its normal position by soft tissue changes. Although the frenum and incisal papilla did correct their positions at 15 years the central incisor still did not. Therefore, dental care of all teeth is our best safeguard to prevent uncontrolled and unfavorable change of occlusion.

How do teeth change their position? Do they move forward or do they move backward? The answer depends upon one's own orientation and a concept of relative change. In order to clarify the concept of relative change, I have constructed dental arch outlines from measurements of child R. A. for the four periods (Fig. 7)—birth, deciduous, mixed, and permanent dentitions. For simplicity the outline was formed by connecting the incisor (*I*), canine (*C*), molar (*M*), and posterior points (*T*) of the dental arch. Only the upper arch will be described since the principle of change is similar to that of the lower (Fig. 8). The sagittal line *CL* was one line of orientation, while the anteroposterior orientation had four possibilities: the incisors, the canines, the molars, and the posterior points. Let us consider the changes that would take place when the dental arches for the different dental periods are superimposed on each other under the four possible orientations. The medium-sized dashes represent birth (*B*), small dashes, mixed (*M*), and the large dashes,

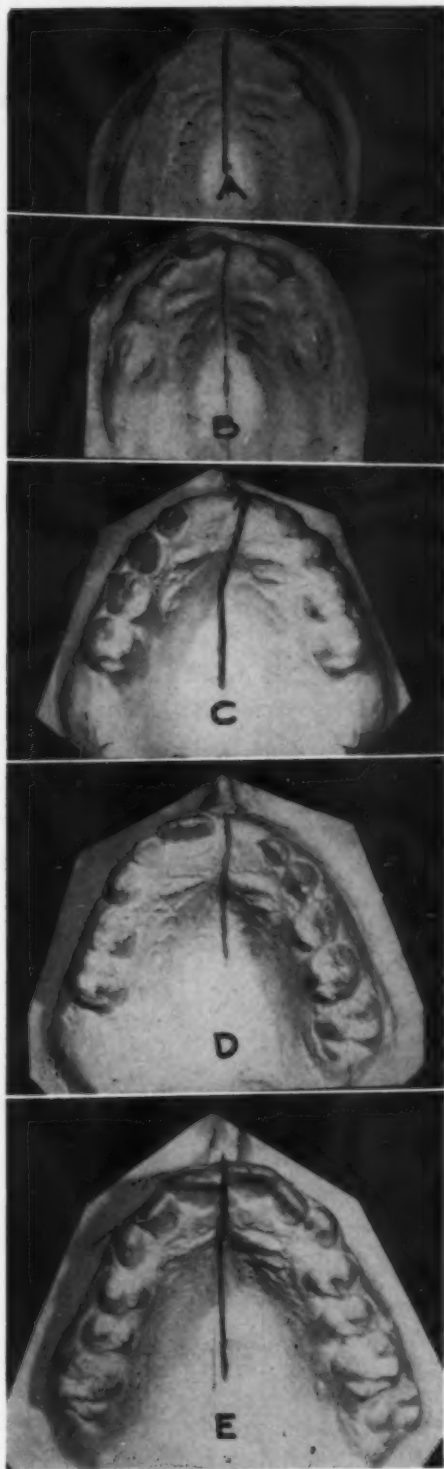


Fig. 6.—Serial upper casts of child P. H. illustrating soft tissue changes.

- A, 1 year, 7 months
- B, 2 years, 3 months
- C, 7 years, 8 months
- D, 8 years, 9 months
- E, 15 years, 6 months

Note straight median line of palate.
 Slight deflection of median line one week after loss
 of central incisor.
 Marked deflection of median line.
 Partially correction of median line.
 Further correction of median line. Note poor posi-
 tion of central incisor.

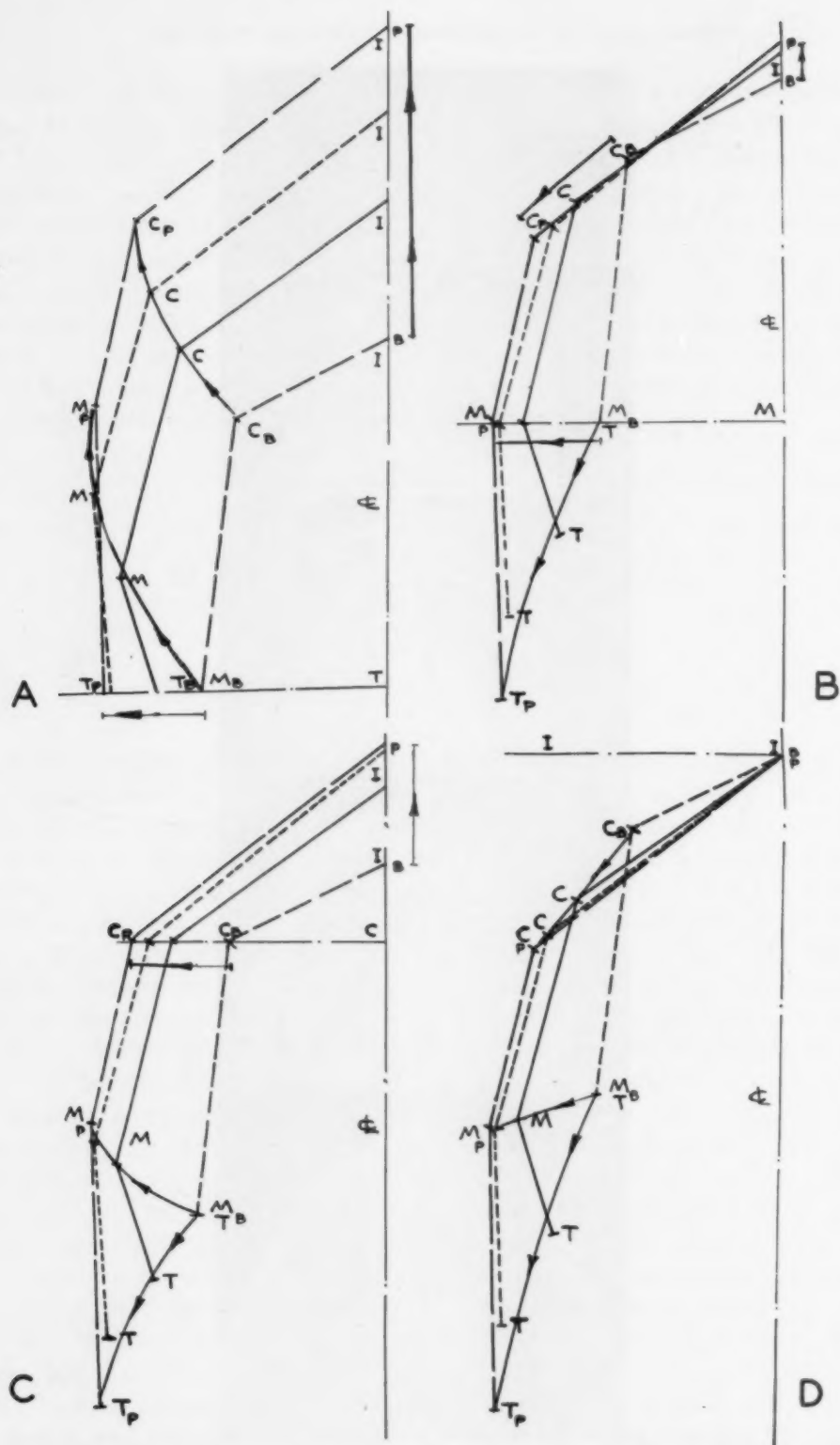


Fig. 7.—Occlusal outline of upper dental arch at birth (medium dashes), deciduous period (solid line), mixed period (small dashes), permanent period (large dashes). Note magnitude and direction of arrow line for points T_B to T_P ; points M_B to M_P ; points C_B to C_P ; points I_B to I_P .

- A, Oriented about posterior line (T-T).
- B, Oriented about molar line (M-M).
- C, Oriented about canine line (C-C).
- D, Oriented about incisor line (I-I).

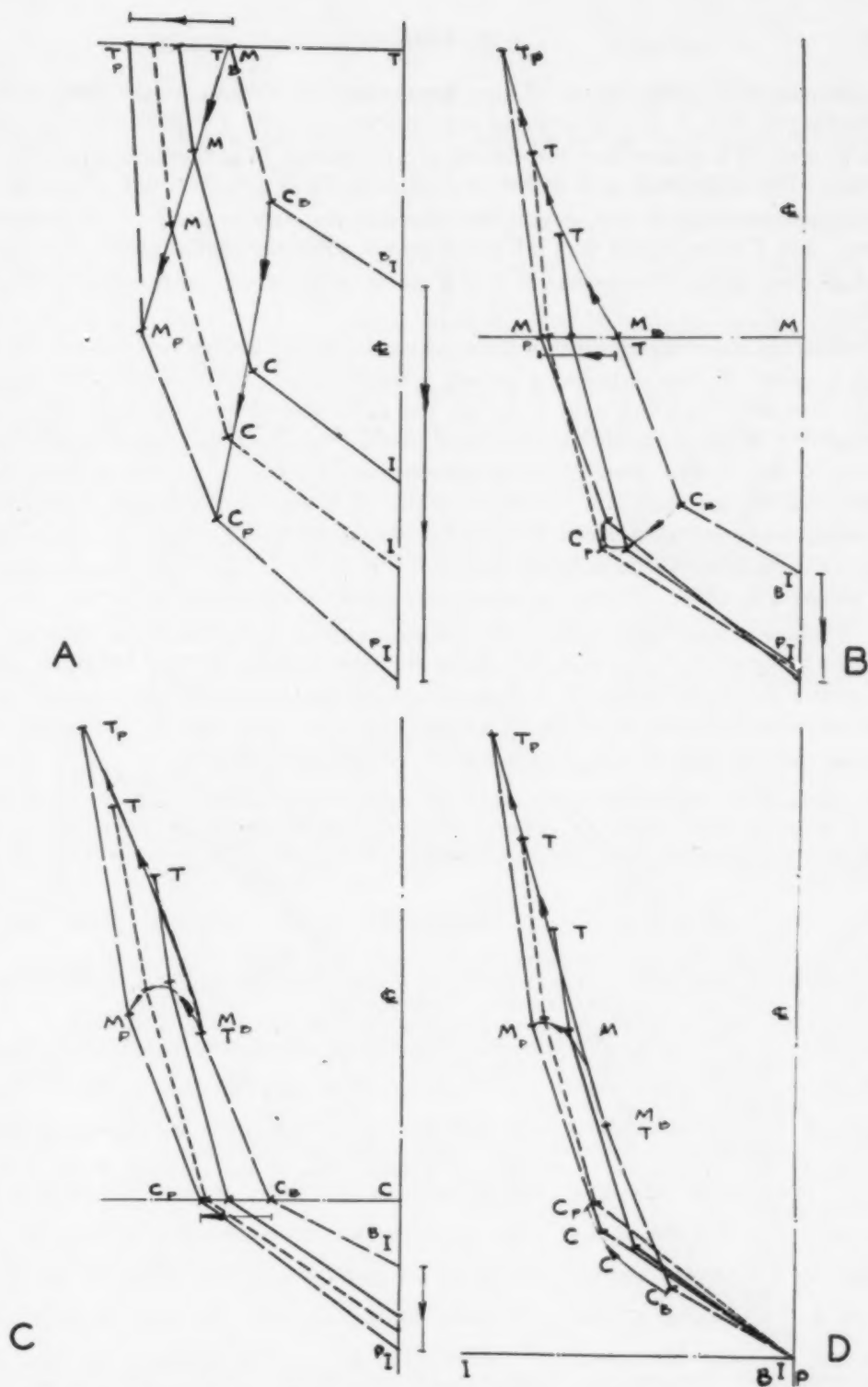


Fig. 8.—Occlusal outline of lower dental arch at birth (medium dashes), deciduous period (solid line), mixed period (small dashes), permanent period (large dashes). Note magnitude and direction of arrow line for points T_n to T_P ; points M_n to M_P ; points C_n to C_P ; points I_n to I_P .

- A, Oriented about posterior line (T-T).
- B, Oriented about molar line (M-M).
- C, Oriented about canine line (C-C).
- D, Oriented about incisor line (I-I).

permanent (*P*), while the solid line represents the deciduous dentition (*D*). Referring to Fig. 7, *A*, the outlines were constructed with *TT* as the base, and it can be seen at a glance how the dental arches change in size and form for each period. The magnitude and direction of change for the various key points from birth to the advent of the permanent dentition are also indicated by the arrow lines. The *T* point moves in a lateral direction while the incisal point (*I*) moves sagittally forward. The points *M* and *C* move in a forward and outward direction.

How do these changes differ when using the line *MM* for orientation? (Fig. 7, *B*.) Point *M* now only has a lateral direction while the *I* point moves sagittally forward, but the *C* and *T* points travel backward and outward, differing in degree. When the arches are oriented around the *C* points we have a different picture (Fig. 7, *C*). Here *C* moves outward and *I* forward, but *M*, on the other hand, travels outward and forward, while *T* moves outward and backward. Finally, when oriented about the *I* point the *C*, *M*, and *T* points all move outward and backward to a different degree (Fig. 7, *D*). Therefore, the movement of points will differ depending upon what line one uses for orientation.

Change is a certainty of life and dental occlusion is no exception. We would like to know when, how, and why these changes take place. By learning what to expect we make a friend of change and our task simpler. It is hoped that this paper contributes to a clearer understanding of some aspects of change and the concept of relative change as it refers to dental occlusion.

The author wishes to thank Dr. W. F. Harrigan, Dr. L. E. Holt, and Dr. W. E. Studdiford, in whose departments of Bellevue Hospital part of this study was made, Dr. H. Bakwin for his counsel, and, finally, the parents and children who are cooperating in this study.

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A COMPOSITE CASE REPORT OF CLASS I MALOCCLUSIONS WITH INSUFFICIENT ARCH LENGTH

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THESE malocclusions have normal relation of the maxillary and mandibular arches to each other, but show a severe lack of arch length or insufficient intercanine space in both jaws to accommodate the incisor teeth in non-rotated positions. The axial inclination of central incisors, both maxillary and mandibular, is within the accepted range of normal; they are further characterized by good facial profile, the overbite ranges from slight to severe, age of the patient is somewhere between 7 and 9 years (Fig. 1).

The etiological factors in these cases are usually attributed to heredity, lack of sufficient growth and development, or, as we frequently hear, teeth too large, arches too small.

There are several variations in adjustment of incisor teeth in this type of malocclusion:

1. In the maxillary and mandibular arch or either arch individually the erupting permanent lateral incisors have caused the exfoliation of the deciduous canines, the incisors usually assume fair alignment, in the space intended for the permanent canines as well as the incisors (Fig. 2).

2. In the mandibular arch the erupting lateral incisors are partially blocked out, mainly to the lingual, less frequently to the labial; if the lateral incisors are lingual they will maintain their position until the deciduous canines are exfoliated or they will attempt to rotate into the lateral space. In either event there is usually a noticeable loss of alveolar bone on the labial of one mandibular central incisor.

This loss of alveolar bone is interpreted in the following manner.

The mandibular lateral incisor in its eruptive tendency to move labially, with the help of tongue action, is exerting labial pressure on the mandibular central incisor. The mandibular central incisor is restricted in its labial tendency by the maxillary central incisor, causing traumatization resulting in alveolar bone loss.

3. In the maxillary arch the unerupted lateral incisors are most frequently found in lingual position to the erupted central incisors. If the maxillary deciduous canine maintains its position, and it usually does, the erupting lateral incisors will be held to the lingual and lock behind the lower incisors. Occasionally we find that the maxillary lateral incisor has erupted to the labial; also we may find the maxillary lateral incisor attempting to rotate into the lateral space similar to the mandibular lateral incisor. This will depend somewhat on the degree of overbite as to whether they will stay in lingual position or attempt to rotate into the lateral space.

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Plan of Treatment.—All four deciduous canines are removed after the eruption of the mandibular lateral incisors and before the eruption of the maxillary lateral incisors. This phase of treatment is referred to as the period of incisor adjustment. Generally speaking there is an improvement in alignment of the incisor teeth whether they are labial, lingual, or rotated (Fig. 3). No mechanical appliances are used if the second deciduous molars are present and in good condition.

Fig. 1.

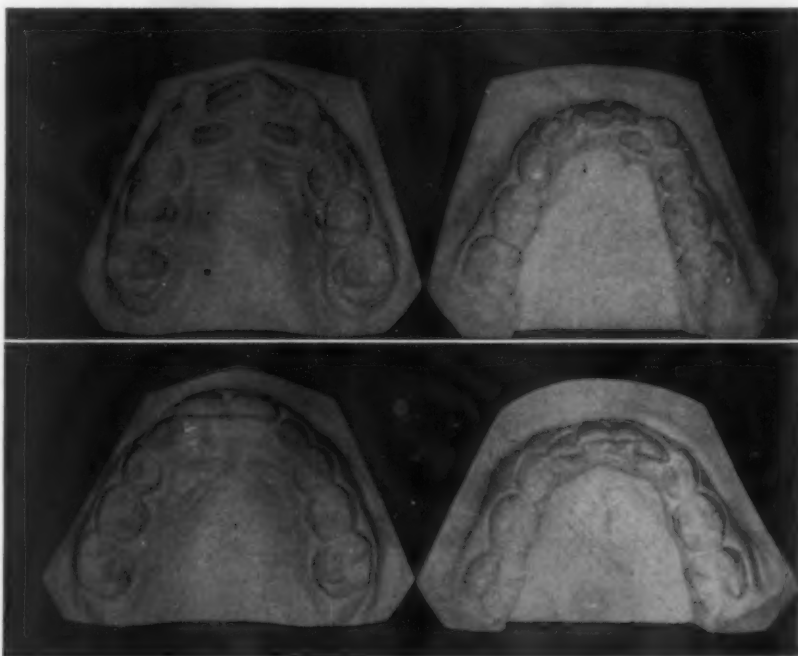


Fig. 2.

Fig. 1.—Typical case showing severe lack of intercanine space with resultant irregularity of maxillary and mandibular incisors.

Fig. 2.—Erupting permanent lateral incisors exfoliated all of the deciduous canines.

Foster¹ in his recent work supports the contention that the buccal teeth do not migrate forward when the deciduous canines are removed in the mandibular arch. He does, however, recommend the placing of a lingual appliance to prevent the lingual inclination of the mandibular incisors. I feel that this is an unnecessary procedure in the type of cases described; it may be necessary in cases where the maxillary incisors are protrusive or labially inclined.

After the period of incisor adjustment, the next procedure in the treatment plan is to decide when is the best time to remove the four first premolars to allow for the most favorable adjustment of the permanent canines (barring an unusual breakdown of the first permanent molars, the congenital absence of second premolars, or their malformation). This phase of treatment is referred to as the period of canine adjustment. The most favorable time for

removal of the first premolars depends on the sequence of eruption of the canines and first premolars; this is determined by x-ray examination, approximately one year after the removal of the deciduous canines.

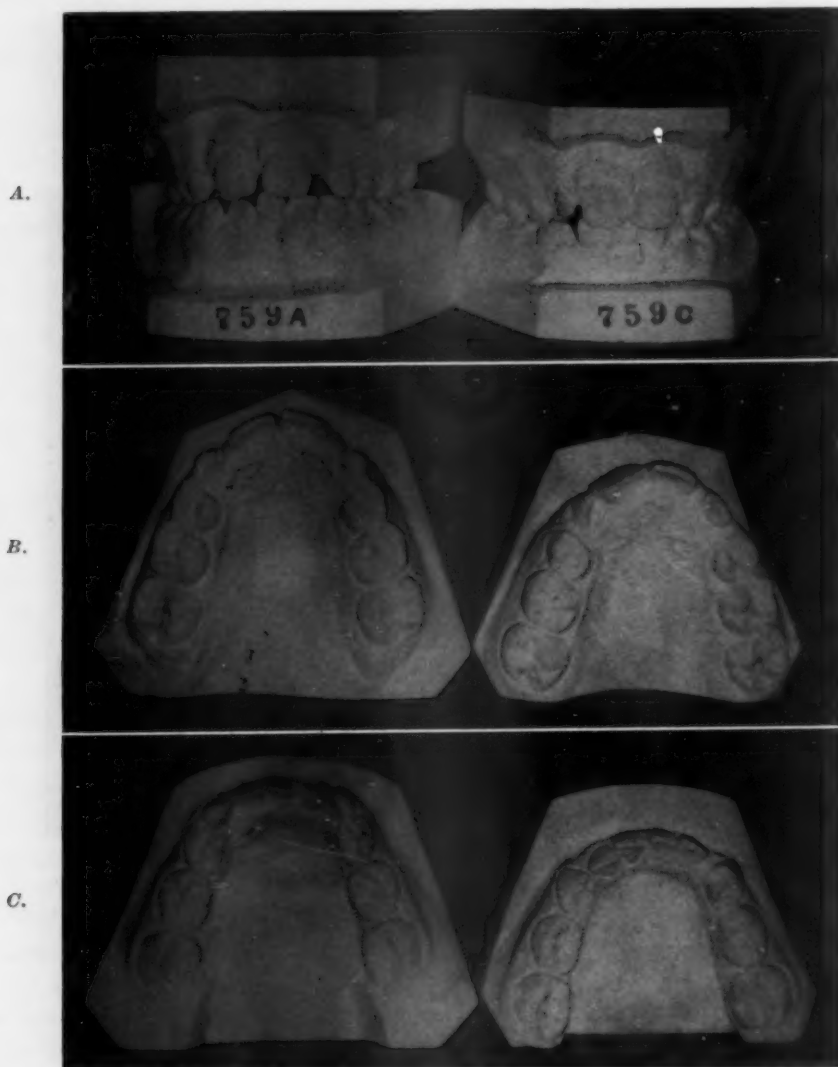


Fig. 3.—A, B, and C, Case in which all four deciduous canines were removed with resulting change in incisor position.

There are three possibilities:

1. If the x-ray shows that the canine will erupt before the first premolar, the premolars should be removed before eruption. This occurs infrequently in the maxillary arch. In the mandibular arch this sequence of eruption occurs in approximately 60 per cent of all cases.²

2. If the x-ray shows that the canine and premolar appear to be even in their eruption rate, the first deciduous molar is removed to allow the eruption of the first premolars before the eruption of the canine. After the eruption of the first premolars they are removed.

3. If the x-ray shows that the first premolars will erupt before the canines the premolar removal is deferred until its eruption and the first deciduous molar is allowed to exfoliate.



Fig. 4.—*A*, Removal of maxillary deciduous canines has allowed permanent lateral incisors to migrate forward and erupt in fair alignment. *B*, Long retention of maxillary deciduous canines has restricted forward migration of permanent lateral incisors resulting in their lingual eruption and locking lingual to the mandibular incisors. *C*, Removal of mandibular deciduous canines restricted further loss of labial alveolar bone.

During the period of canine adjustment the exfoliation of the second deciduous molar takes place and the second premolar erupts. After a maximum period of canine eruption and adjustment and eruption of the second premolars the time has arrived for mechanical treatment. The problem at this time consists of closing any remaining spaces, rotation of individual teeth, and opening the bite if possible and indicated. The early removal of the deciduous canines is indicated in Class I cases showing insufficient arch length or severe lack of intercanine space and the advantages and conclusions may be summarized as follows:

1. Prevents the further loss of alveolar bone on the labial surface of the mandibular central incisors.

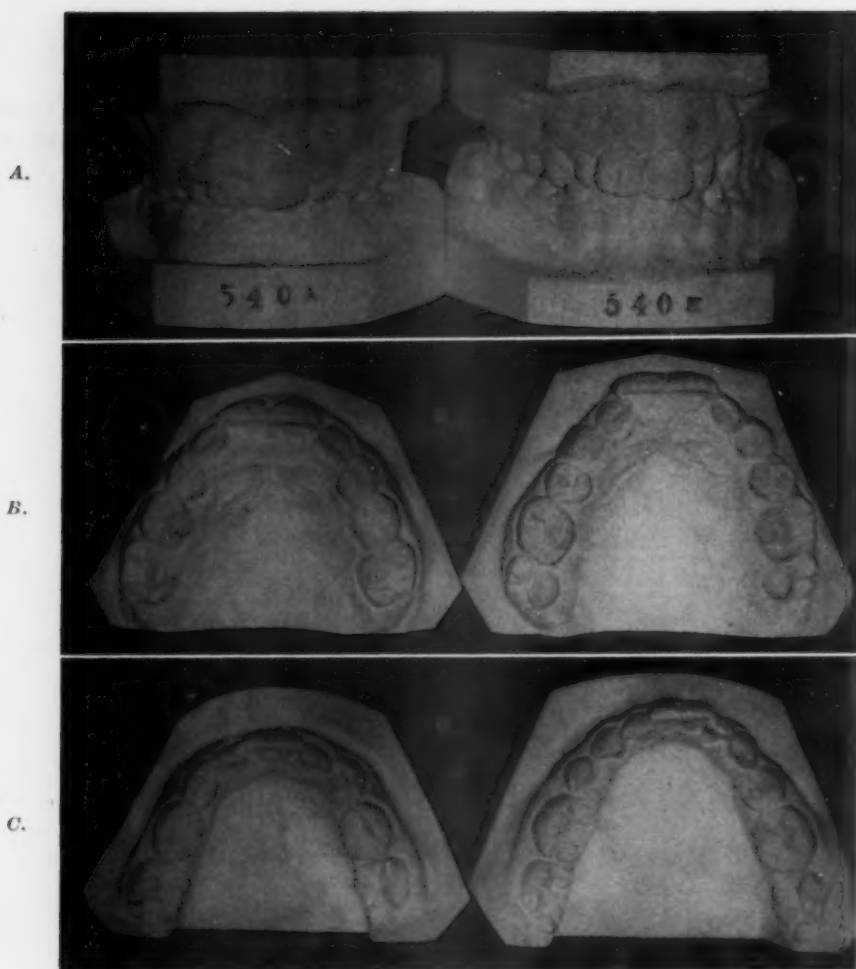


Fig. 5.—A, B, and C, Case in which all deciduous first molars and all of the unerupted first premolars were removed. No mechanical treatment. Time interval, three years.



Fig. 6.—A, Case shown in Fig. 5. On left, one month after removal of deciduous first molars and unerupted first premolars. On right, three years later, no mechanical treatment. B, Two cases in which the first premolars were removed before eruption. No mechanical treatment. Earlier removal of the first premolars of case on right would have produced a more vertical axial inclination of the permanent canine.

2. Prevents the lingual locking of the maxillary lateral incisors.
3. Eliminates the severe crowding and overlapping of the incisor teeth and should reduce the caries incidence (Fig. 4).

Following the removal of the deciduous canines and after the period of incisor adjustment, if the first premolars are not removed to allow a favorable adjustment of the permanent canines, the incisor region will either become recrowded and irregular or the permanent canines will be completely or partially blocked out.

The advantages following the earlier removal of the first premolars may be summarized as follows:

1. Reduces the possibility of a psychological problem associated with the appearance of unsightly and irregular teeth as the patient is carried through a period of dental development without any extreme irregularity (Fig. 5).
2. Reduces considerably the time for mechanical treatment.
3. Prevents a displacement of anchorage of the buccal teeth as the major canine adjustment takes place without the necessity for mechanical treatment to move the canines distally (Fig. 6).

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A CASE REPORT

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THE presentation of a case report has been and always will be, to me, a needless and boresome ordeal unless there is a possible point along the line which may be of some interest to the listener. Orthodontics is not an exact science but exists principally as an art; therefore, how are we to assume that two similar cases, though treated identically, will have similar responses. I am therefore convinced that any case report should be no longer than the weakest kidney, and I promise to stick to my word.

This patient, a young man of 16, presented himself to our office as a thick-lipped, open-mouthed, "dopey-looking" individual. He was a confirmed mouth breather. As can be seen in Figs. 1, 2, 3, and 4, the case was Class I with the lower jaw being approximately the correct size with relation to the skull and the upper jaw extremely underdeveloped, both in length and width. The anterior teeth as well as the buccal sections were edge-to-edge and in some instances were actually inlocked. I especially selected this case as it belongs to that ornery group in which, even when molar separations are placed, the bite begins to open. X-rays in Fig. 5 revealed everything to be quite normal and in proper order.

There was a history of a very severe injury to this boy as a child, which resulted in almost the complete closure of his nasal passages, deflected septum, a bony overgrowth, etc. He was immediately referred to a nose and throat specialist who advised against any form of nasal corrective work until the boy was at least 17 years of age, or a severe nose deformity would result. Consequently, I had to tackle this case and do something in spite of it all.

Diagnosis was based on horse sense plus the fact that there was sufficient basal bone to enlarge the upper jaw, allowing the upper teeth to be rounded out and carried to their proper positions. The appliance system was designed upon this premise and can be described as follows: Fig. 6, upper first molars were banded, round tubes buccal, half-round tubes lingual, the upper four anterior teeth were banded using edgewise bracket attachments. At first, on the upper arch a 0.022 by 0.022 inch labial was used, together with a lingual. The lower first molars were then banded, using the same tubage as in the upper, and, in addition, the lower six anterior teeth, also using the same attachments as the upper anterior teeth. In the lower a 0.022 by 0.028 inch labial was constructed.

After these appliances were in place for a short time and tooth movement particularly in the upper anterior teeth was so tedious, I got the bright idea of using an upper twin wire, ligating it to the edgewise brackets. The upper anterior teeth came forward amazingly, spaces were opened for the canines, and the alignment in general was fairly good. Of course, the necessary width on

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the upper anterior teeth was obtained by the above-mentioned lingual. An upper 0.022 inch by 0.028 inch was then placed to give the final root throw and rotations necessary to complete the case. In the meantime, the lower anterior teeth were rounded out and, of course, as was expected, vertical elastics had to be used in the canine regions to prevent the bite from opening. I might

Fig. 1.



Fig. 2.

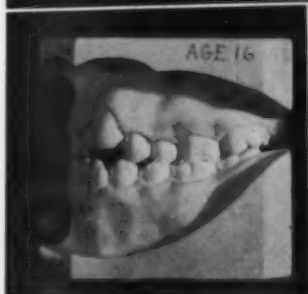


Fig. 3.



Fig. 4.

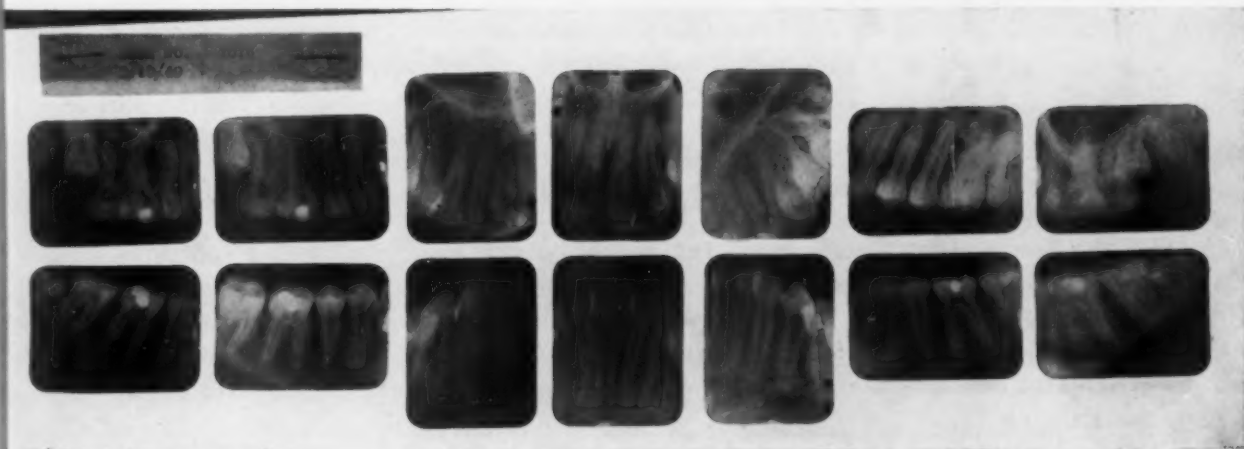


Fig. 5.

add that with the advent of Dr. Johnson's flat wire labial, I no longer resort to edgewise brackets.

The length of time of active treatment was approximately one year, nine months, at the end of which the upper appliance was removed completely and

a Hawley placed. The lower anterior bands were removed and a lower lingual placed for purposes of retention.

This young man was then a senior in high school and, as can well be remembered, some of these young men in the War days could join the Army and have their diplomas mailed to them. This is exactly what happened and the next I heard of the boy was from the West Coast. His retainer wire had been broken and it was sent back to me. I advised his parents to get the lower appliance off completely and continue with the upper retainer which I had repaired and returned. The next time I saw him was about four years later, the upper retainer having long been lost, the lower lingual ripped out, and I do mean *ripped*. I removed the lower molar bands, finding that the seals had remained intact and with absolutely no decalcification under them. I took a final set of impressions, shown in Figs. 7, 8, 9, and 10, of a mouth of which I was rather proud. It must be remembered there had been no retention for heaven knows how long, and these casts were not the result of impressions taken exactly sixty seconds after the removal of appliances. An appointment was arranged to have final x-rays taken; it was broken, and the next thing I knew the boy was back in California and I have not seen him since. Therefore, I have no final x-rays.

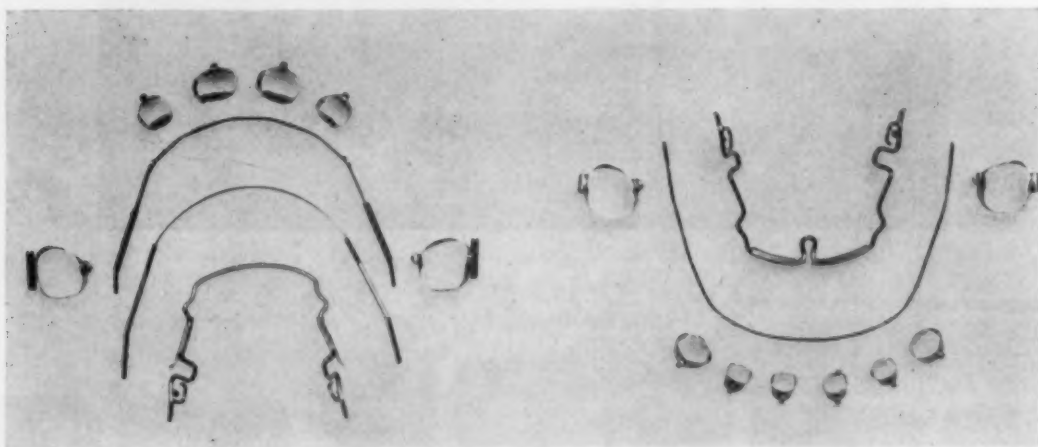


Fig. 6.

Now at least there are two sufficiently important points which I can think of, as a possible excuse for giving the above report. The lower molar bands, in spite of being on for approximately six years, did absolutely no harm to the molar teeth, and the removable wires which we use in the Hawley retainers were replaced on a master model and the retainer returned to him without even seeing him.

Our method of fitting and cementing bands is by no means original with me, but comes from the ideas of the late Dr. J. Lowe Young. First, a band is fitted accurately and then driven to the position it is to occupy on the tooth. Then this band is heat-treated and polished and cemented with Germicidal Kryptex. To me, herein lies a most important point and is based upon the paraffin seal Grandma used to use on her preserves. If the seal, using a non-

adhesive cement, remains intact, that band is cemented tightly and no decalcification can take place. If the seal is broken, within two weeks that band is really loose, and if you do not spot it the patient will, but quick. If an adhesive cement, an oxyphosphate, is used, the seal can break, for example, on the buccal, and the mesial, distal, and lingual still hold tight and no one in the world is aware that the band is leaking. When this band is removed, either upon conclusion of the case or upon request of the dentist, a most peculiar sensation is felt, accompanied by a face as red as a turkey gobbler. Therefore, to me, the real purpose of a

Fig. 7.



Fig. 8.

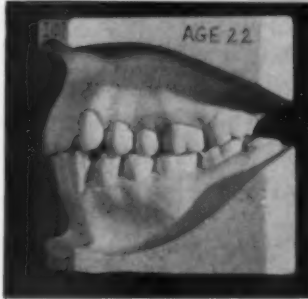


Fig. 9.



Fig. 10.

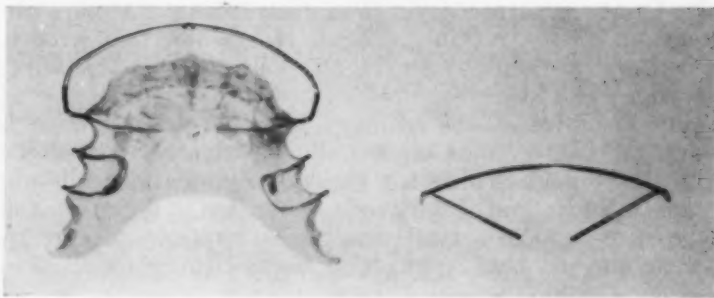


Fig. 11.

cementing medium is nothing more than a filler between tooth and band, the permanency of the band not depending on an adhesive cement, but rather the accuracy of fit.

The other point of interest in this case is the easy repair of a retainer wire, so to speak, by mail. Our retainers are made of clear plastic using Crozat locks on the second premolars and a 0.032 inch wire in the anterior section which is removable. All metal in these retainers is stainless steel. The wire is bent up, as shown in Fig. 11, in the usual fashion. The ends of the wire are left perfectly straight and a tapered key is cut one-quarter of an inch long, 0.025 inch thick at the shoulder, tapering to 0.020 inch at the end. This key is cut with a lighting disk and finished with cuttle for smoothness. The retainer is then waxed up as usual and processed. Upon finishing, the anterior wire is cut in the median line and the two wires are then withdrawn separately. Wire plugs, 0.032 inch, are jammed in the resultant holes to prevent polish and debris from clogging them. When the retainer is polished, and I believe in polishing both sides for purposes of hygiene, the plugs are removed and the wires forced back into their original positions. Low-fusing chrome solder is then used to reunite the two wires at the median line. This particular design has several advantages. First, the plate can be more accurately cut and polished. Second, if the wire snaps, a new wire can be keyed with the same taper, forced into the plate, and bent into proper shape on the master model, and it is not necessary to have the patient anywhere around. Another fact, which is very important to me, is that in those cases in which you taper off on retention, the wire can be taken out of the plate and filed away. If, by chance, you discover you have been too hasty in removing the labial wire, the plugs can be withdrawn and the wires replaced. Normally, you would cut the wires from the plate and if you need them again, you have a definite repair job on your hands. These removable wires have saved me countless headaches with indifferent youngsters who do not have the slightest idea why their wires break unless there was a strong wind blowing.

Editorial note: Further information was requested from Dr. Nycé designed to enhance the usefulness of his case report to the reader, with the following reply:

"First, the easier question: Germicidal Kryptex is used and the consistency is that of thick cream. The set is not too fast and it gives ample working time for one or two molars as you may choose.

"Second: Under separate cover I'm forwarding the wire that was used for the photograph of the retainer. Keep it. When this wire is waxed up, flaked and processed in the final acrylic a female that fits this wire is naturally left in the acrylic. The key is tapered in order that it is easily withdrawable. Naturally, before the wire can be removed from the plate it must be cut in the median line and the two sections taken out individually. I find it better to reunite the wire at the median line for rigidity. Sometimes this rigidity is not needed and then I do as you do, leave it separated. When you do solder the median line be sure to take a small piece of dampened blotter and fold over the plate to make sure no heat would tend to melt the plastic."

NORRISTOWN-PENN TRUST BLDG.

THE SELECTION OF CASES FOR TREATMENT IN THE DECIDUOUS DENTITION

CHARLES R. BAKER, D.D.S., EVANSTON, ILL.

A CONSIDERATION of the deciduous dentition should be of special interest to every orthodontist. Before discussing the treatment of cases, let us review our understanding of the value and importance of the deciduous teeth and their contribution to the growth and development of the dentofacial area and to the health of an individual.

Noyes, Schour, and Noyes¹ have stated:

The deciduous dentition has a much greater biological importance than has been generally recognized. In addition to their masticatory function, the deciduous teeth, by their presence in the dental arch maintain the space for the correct alignment of the successional teeth and stimulate the normal growth and development of the jaws. Premature loss or extraction of any deciduous tooth will often cause malposition or malocclusion. An infection of deciduous teeth may lead to permanent injury to the developing successional teeth. There is no justification for the neglect of the deciduous dentition because of its temporary nature.

The following is quoted from a radio broadcast by R. C. Willett,² who contributed so generously to the advancement of orthodontics:

The unimpaired use of sound deciduous teeth guarantees a better preparation, and therefore a better assimilation of food for nutrition. The child, in proportion to its weight, must eat and assimilate about three times as much food as an adult.

Through normal use of the deciduous teeth, the muscles of mastication are developed evenly, and the normal growth of the jaws and all associated parts of the head is directly promoted.

This stimulated growth of the jaws, through the normal use of the deciduous teeth is favorably reflected in the size of the important air passages leading from the nose and throat, and these passages serve directly and indirectly in the proper aeration and oxygenation of the blood.

If the deciduous teeth are in full and unimpaired use, the eruption of the permanent teeth will occur in more regular and correct positions. Normal arrangement and function of the deciduous teeth are a mental and physical comfort to the child, and promote his happiness and general good disposition.

After stressing the importance of normal function of the lips, cheeks, and tongue in the dentofacial development, Frederick B. Noyes³ stated:

The adult bones are a result of all the forces exerted on them and distributed through their substance by the occlusion of the teeth. If the occlusion is normal, the forces are perfectly balanced, and a harmonious and symmetrical development is the result. In proportion as the occlusion deviates from the normal, there is a disturbance of harmony of development. The preservation of normal occlusion is necessary therefore not only for the proper mastication of food, but for the proper development of the face and proper function of respiration and swallowing.

Read at the Twenty-third Annual Meeting of the Great Lakes Society of Orthodontists, Toronto, Ontario, Canada, Nov. 10, 11, and 12, 1952.

The foregoing statements apply to the deciduous as well as to the permanent dentition.

Another quotation from R. C. Willett⁴ reads as follows:

The terms "primary" or "temporary" teeth, as the deciduous dentition is frequently called, seems to carry with it a subtle but dangerous suggestion that prophylactic care of a child's teeth does not require the same consideration and skill in treatment as that given to the permanent ones.

The persistent retention of this false idea in the minds of a majority of people is undoubtedly accountable for much early dental neglect that becomes a contributing cause of many childhood afflictions.

A similar thought was expressed by Joseph H. Kauffmann⁵ who suggests the term "foundation teeth" to replace such terms as "milk teeth, baby teeth, primary teeth, and first teeth." Foundation means "that on which anything is founded; groundwork." The term is very appropriate; "it stimulates the thought of what is to follow if the groundwork is good. In other words, a good first set of teeth leads to a good second set."

Let us accept this term and acknowledge that the deciduous dentition is the foundation for the permanent dentition. Experience has shown that if there is marked malocclusion (for example, a cross-bite) in the deciduous dentition, we may expect a similar abnormality in the permanent dentition. While it is true that Nature may correct some minor malocclusions during the developmental process, probably if some pressure habit has been discontinued, we cannot expect that the permanent dentition will be normal as to tooth position and relation if deformities are present in the deciduous dentition.

Let us consider the length of service of the deciduous teeth. For convenience we will consider that the incisor teeth have erupted at the age of 1 year, and the other teeth at 2 years. The time of shedding of the teeth is that generally considered correct.

TABLE I

	TIME OF ERUPTION	TIME SHED	YEARS OF SERVICE
Central incisor	1 year	7 years	6 years
Lateral incisor	1 year	8 years	7 years
First molar	2 years	10 years	8 years
Second molar	2 years	11 years	9 years
Cuspid	2 years	12 years	10 years
	Total		40 years
	Average		8 years

You will note that the *foundation* dentition functions for an average period of eight years, during a time of rapid growth and development of the entire dentofacial area, and at a time when a growing child requires adequate nourishment, properly masticated; it carries the dental load while the larger permanent teeth and the jaws, with their associated tissues, are developing. In the development of the entire human body, there is no other instance of temporary, or foundation elements, being shed and replaced later by similar permanent organs.

When a young child presents at your office, a careful examination of the mouth should be made. A suitable card providing space for recording the following data should be used:

Date

Name of patient

Age, in years and months

Name of parent

Address

Telephone number

1. General arrangement of the teeth, and form of each dental arch.
2. The teeth should be counted.
3. The patient should be asked to close the teeth so that the occlusion may be checked.
4. The anteroposterior relationship of the dental arches should be recorded, each side of the mouth being considered separately.
5. Cross-bites, open-bite areas, excessive overbite, protrusion of maxillary teeth, as well as abnormal conditions of the soft tissues should be noted.

If the patient is a mouth breather, it may be advisable to suggest an examination of the nose and throat by a rhinologist.

In addition to the items mentioned, full-mouth radiographs should be made as soon as convenient; sometimes extraoral films will prove satisfactory. These should be carefully studied for the following information:

1. Amount of development or resorption of deciduous roots.
2. Positions of permanent teeth and degree of development.
3. Presence of supernumerary teeth.
4. Missing teeth.
5. Remaining fragments of deciduous roots.

In so-called "borderline" malocclusion cases, it is advisable to take impressions and make casts at regular intervals, usually six months; additional radiographs may also be indicated.

With this procedure, a case may be thoroughly studied and a correct decision made regarding orthodontic treatment. The genuine interest of the operator who keeps adequate, accurate records of his young patients will be a most important factor in the prevention of malocclusion.

The most favorable time for orthodontic movement of deciduous teeth is while the deciduous roots are fully developed, for at this time the movement of these long roots through the alveolar process will produce their greatest influence on their permanent successors. If treatment is deferred until the deciduous roots are partly resorbed, there will be greater development of the succedaneous teeth and the prognosis for the best results will be decreased. This point should be kept in mind particularly when considering the movement of deciduous incisors.

Orthodontic movement of the deciduous molars invariably results in favorable influence on the succeeding teeth. This is understandable for we know that the premolars develop between the widespread deciduous roots.

Regarding the selection of cases for treatment in the deciduous dentition, my records indicate that the majority of cases I have treated were those of linguoversion (cross-bite) of the maxillary anterior teeth. All of these cases fell within the range of neutroclusion; some might be termed pseudo-mesioclusion cases. Next in number were cases of cross-bite of posterior teeth, some

bilateral and some unilateral in character. I have treated only a few distocclusion cases. I have seen only one true mesiocclusion case.

There are also cases of extremely narrow mandibular dental arches, in which the posterior teeth, unilateral or bilateral, may be entirely out of occlusion with the maxillary teeth.

In my experience I have never seen a case of crowded or overlapped maxillary anterior teeth, unless associated with a cross-bite. In cases of wide interdental spaces in this area, we may suspect that a pressure habit may be a contributing factor. However, if the maxillary anterior teeth are badly rotated, with or without interdental spacing, it will be advisable to examine radiographs of the area involved to ascertain whether or not supernumerary teeth are present.

I do not recommend immediate orthodontic treatment in cases of slightly crowded mandibular anterior teeth. Natural developmental forces will, in many of these cases, provide proper space for a normal eruption of the larger permanent teeth. Such cases should be kept under observation.

Occasionally we see cases of occlusal interference in the deciduous dentition, particularly when the maxillary incisors or cuspids have an inclination to erupt edge to edge or in slight linguoversion.

This condition may sometimes be remedied by judicious grinding of the teeth involved. B. F. Dewel has had success in such cases by having the patient bite on a modified tongue depressor to influence the forward movement of erupting maxillary anterior teeth.

Sucking the thumb, fingers, or other objects sometimes causes abnormal development of the dental arches. If such habit is of short duration, possibly it will have no important influence on the permanent dentition but, if continued over a long period, we may expect that the facial as well as the dental development will be adversely affected. The best treatment in these cases is to induce the child to discontinue the habit. Sometimes if the patient is taught a new game involving use of the hands, the habit will be broken automatically. In other cases it may be necessary to use one of the numerous devices available for preventing the sucking habit. In some cases the use of an appliance consisting of a bar extending across the maxillary arch, attached to bands on the cuspids or first molars, will accomplish the purpose. Myofunctional therapy will be of value in some of these cases if the patient will cooperate faithfully.

Abnormal tongue habits also are potential factors in the development of malocclusion. Unusual activity of the tongue may cause interdental spaces to occur, and biting the tongue or thrusting it forward between the maxillary and mandibular teeth may produce open-bite areas. It is important that these habits be corrected but personally I have had little success in persuading these young children to discontinue the habit. The use of specially designed appliances to prevent injurious tongue habits has been mentioned by some orthodontists.

If the patient has defective speech one should be careful in discussing the case, not to imply to the parents that corrective orthodontic treatment will improve the situation. Other influences may have an important bearing

in the case and possibly the child should be referred to a speech clinic for advice. May I suggest that you be most diplomatic and tactful if you discuss this subject with the parents for they may be quite sensitive regarding the matter and genuinely resentful toward any suggestions along this line.

When deciduous teeth are lost prematurely, through accident or otherwise, suitable space-maintaining appliances may be necessary. Sometimes, when anterior teeth are involved, artificial tooth replacements may be made a part of the appliance.

An important requirement in an appliance intended to maintain space after the loss of a deciduous molar is that the space maintained must be that of the correct mesiodistal width of the lost molar, not merely sufficient space for the succeeding premolar.

In the case of a $3\frac{1}{2}$ (or 4)-year-old patient treated by R. C. Willett, it was necessary to extract all of the maxillary and some of the mandibular deciduous teeth. A maxillary full denture and a mandibular partial denture were used in order to provide a functional chewing apparatus. The dento-facial area developed normally and the permanent teeth erupted in good occlusion.

While the premature loss of deciduous teeth is known to be a frequent etiological factor in malocclusion, it must be remembered that prolonged retention of deciduous teeth is often a contributing factor. Prolonged retention of the anterior teeth may cause malalignment of their permanent successors. It is particularly important that the deciduous molars be lost at the correct time in the development of the dental apparatus. A simple rule to follow is to extract a maxillary deciduous molar, regardless of its physical condition, as soon as the corresponding mandibular premolar has fully erupted. I have discussed this matter at length on previous occasions.

It is considered good practice to extract any deciduous tooth, regardless of the age of the patient, if the tooth is loose and there is evidence that the permanent successor is about to erupt.

When deciduous teeth are extracted, root fragments should not be overlooked, for while these usually are exfoliated, sometimes they persist; they may become mechanical causes of malocclusion and in some cases become sources of infection (Fig. 1).

Cross-bite conditions of the deciduous teeth are invariably followed by similar malocclusion of the permanent teeth, with coincident facial development. In a case of cross-bite of the anterior teeth, the entire maxillary dental arch is restrained in its normal forward development and the forward growth of the mandibular arch usually is exaggerated. The normal development of the premaxillary structures is seriously interfered with. If early corrective treatment is not applied, it is probable that this area may be deficient in size and development throughout life.

Fig. 2 shows a severe cross-bite of the anterior teeth. The maxillary incisors were completely hidden by the mandibular teeth. The patient was 3 years, 10 months old. In this case it was necessary to open the bite to provide space for the use of attachment bands on the maxillary incisors. Cast overlays were used on the maxillary first and second molars. On each side of

the dental arch the overlay on the first molar was joined to the overlay on the second molar by a soldered lingual wire in order to gain additional anchorage. The occlusal surfaces of the overlays were built up with solder and a heavy wire in order to open the bite sufficiently. The overlay assemblies carried buccal tubes, and attachment bands were used on the maxillary incisors. A labial arch wire was used and power was supplied by coiled steel springs fitted around the arch wire just anterior to the buccal tubes. Intermaxillary elastics were not necessary in this case.

Fig. 3 shows photographs of the patient before and after treatment. It seems likely that heredity was an important factor in this case. The father of this patient had one of the most severe cases of mesiocclusion, with underdevelopment of the maxillary jaw, that I have ever seen. He was wearing an unusual denture made to fit over all of his maxillary teeth. It was a skillfully made appliance which provided a good chewing mechanism and greatly improved his facial appearance.

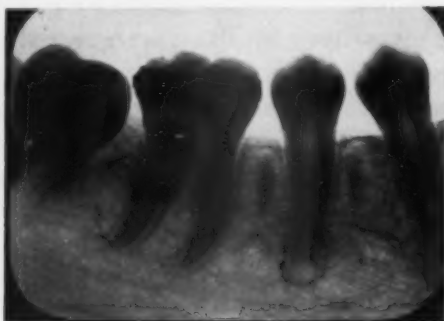


Fig. 1.—Showing fragments of deciduous roots remaining after extraction; associated with interdental spaces.

The patient in Fig. 4 was a sister of the child shown in Figs. 2 and 3. Treatment required four months but was delayed by illness and an accident.

The patient in Fig. 5 was 3 years, 8 months old. The treatment required seven months. Due to the apparent lack of development in the premaxillary region, very gentle pressure was used and there were two rest periods, in order to prevent moving the tooth roots away from the alveolar process. Fig. 6 shows photographs of the patient.

The patient's father was a patient of mine when he was about 9 years of age and he had a similar malocclusion. The patient's grandfather has photographic records showing that for five generations members of his family had underdeveloped maxillary regions and prominent mandibles.

The patient in Fig. 7 was 5 years, 4 months of age. Obviously it did not seem to be the right time to treat a case of this type. However, after discussing the matter frankly with the parents, and explaining the possibility of failure, treatment was undertaken.

Corrective treatment required eleven weeks. The family then moved to another city and did not return until ten years later, when the final impressions were taken. There was no subsequent treatment.

Fig. 8 shows a case of distocclusion in a boy 3 years, 7 months of age. I now have the case under treatment, using a fixed lingual arch wire on the

mandibular teeth, a maxillary labial arch wire appliance and intermaxillary elastics.

It is important to place the deciduous molars in normal relation to their antagonists before the eruption of the permanent first molars. If this is done, the permanent teeth invariably erupt in normal anteroposterior relation. If no treatment is applied, we may expect that the permanent molars will erupt in distocclusion.

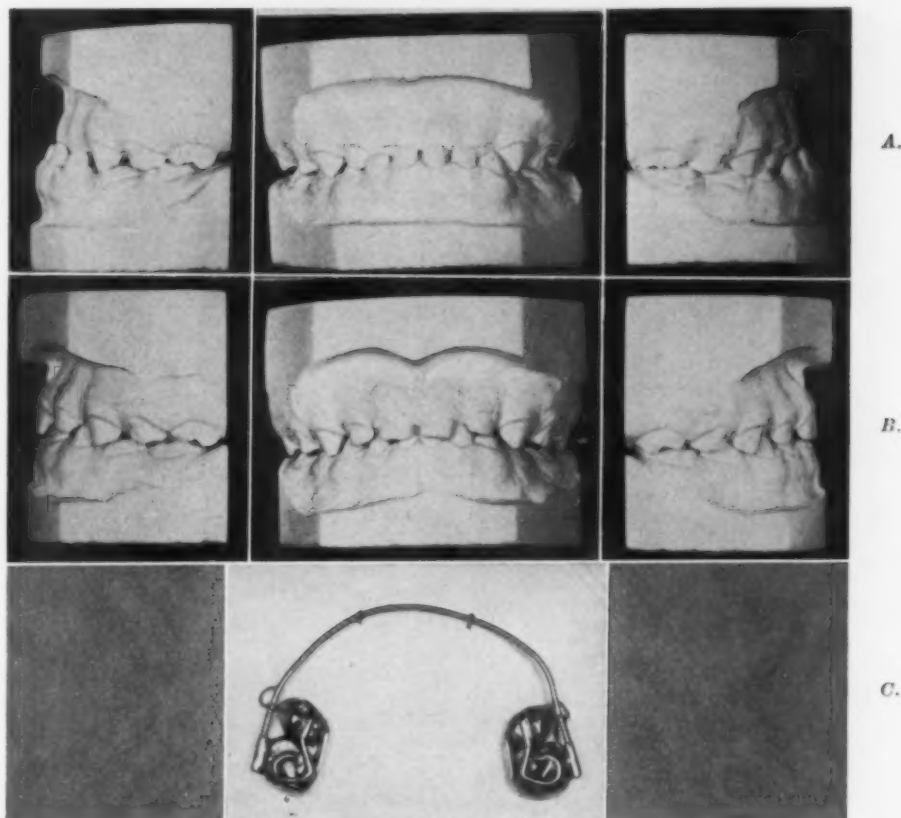


Fig. 2.—A, Aged 3 years, 10 months; three months' treatment. B, Aged 4 years, 1 month. C, Appliance used.

Fig. 9 shows a cross-bite involving the maxillary left lateral incisor, cuspid, and both molars. The patient was 5 years, 3 months of age. Treatment required seven months.

Appliances consisted of a maxillary labial arch wire, seamless crowns on the second molars and a lingual extension wire soldered to the right crown, for additional anchorage. The left first molar was not attached to the appliance but it moved buccally along with the second molar. Later, attachment bands were used on the cuspid and lateral incisor. Fig. 10 shows photographs of the patient.

Fig. 11 shows a cross-bite of the maxillary right posterior teeth. Treatment required eleven weeks. This case needed retention so I reset the seamless crown on the maxillary right second molar after soldering a heavy wire

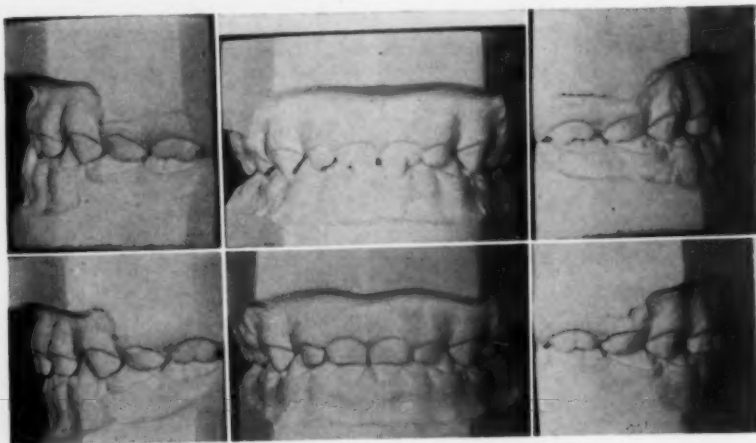
A.



B.

Fig. 3.—Facial photographs of patient shown in Fig. 2. *A*, Before treatment. *B*, After treatment.

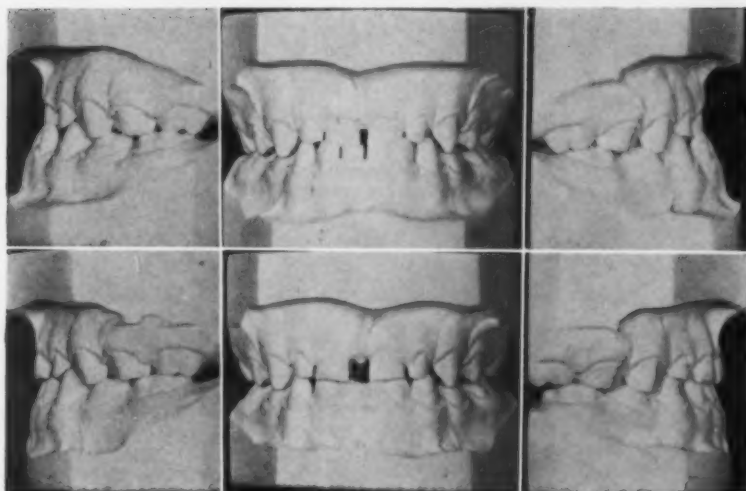
A.



B.

Fig. 4.—*A*, Aged 2 year, 9 months; fourteen weeks' treatment. *B*, Aged 4 years, 1 month.

A.



B.

Fig. 5.—*A*, Aged 3 years, 8 months; seven months' treatment. *B*, Aged 4 years, 4 months.

A.



B.

Fig. 6.—*A*, Aged 3 years, 8 months. *B*, Aged 4 years, 4 months.

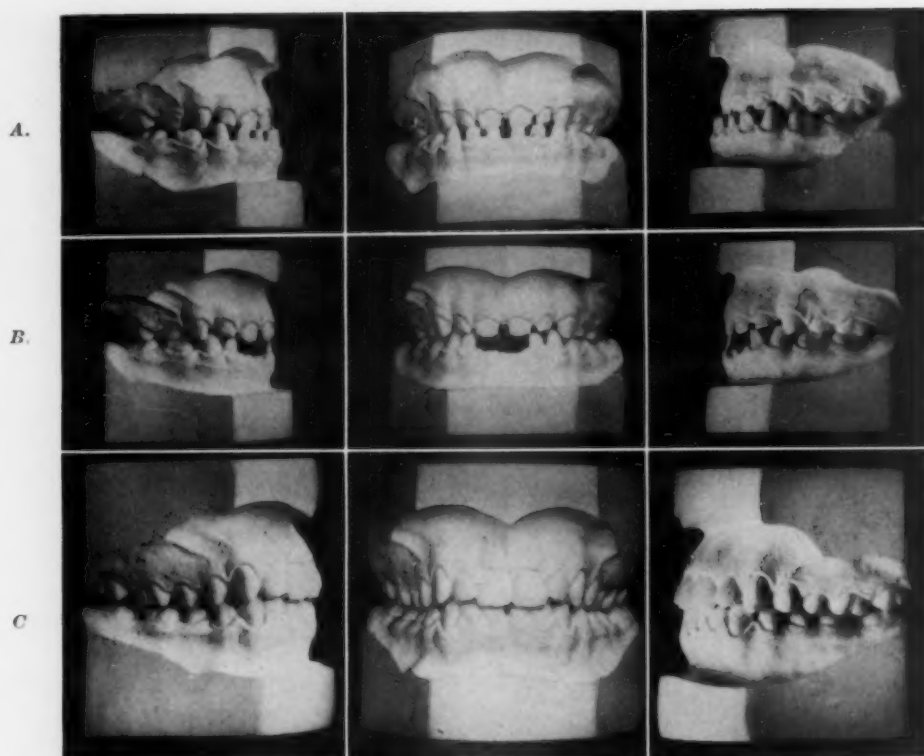
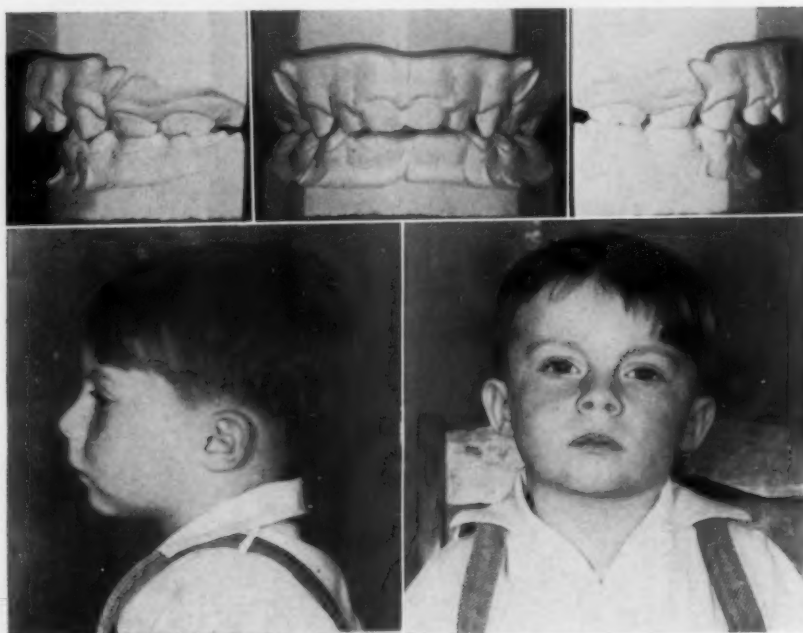


Fig. 7.—A, Aged 5 years, 4 months. B, Aged 6 years, 1 month. C, Aged 16 years.

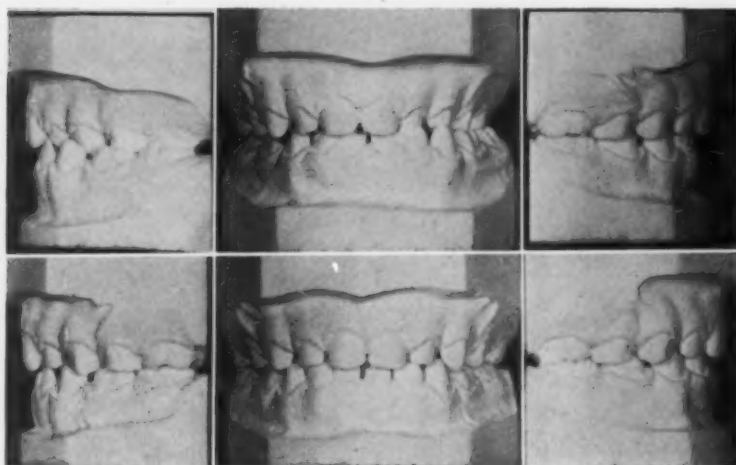
A.



B.

Fig. 8.—A and B, Aged 3 years, 10 months.

A.



B.

Fig. 9.—A, Aged 5 years, 3 months; seven months' treatment. B, Aged 5 years, 10 months.

A.



B.

Fig. 10.—A, Aged 5 years, 3 months; seven months' treatment. B, Aged 5 years, 10 months.

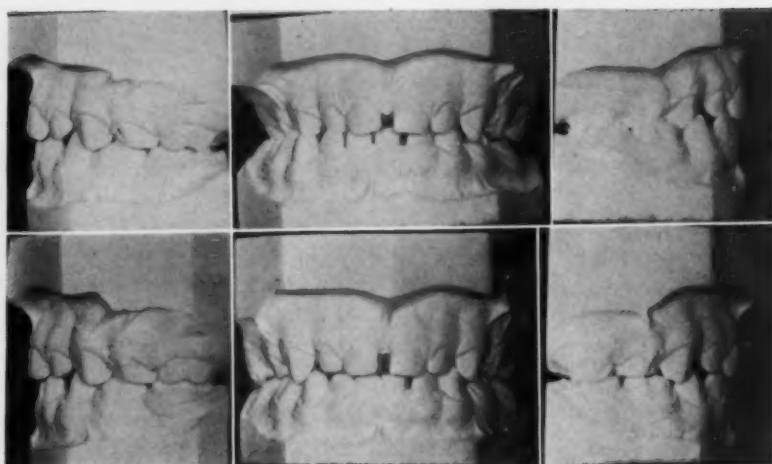
A.*B.*

Fig. 11.—*A*, Aged 4 years, 11 months; eleven weeks' treatment; *B*, Aged 5 years, 2 months.

A.*B.*

Fig. 12.—*A*, Aged 4 years, 11 months; eleven weeks' treatment. *B*, Aged 5 years, 2 months.

over the buccal cusps. This helped to guide the teeth into centric occlusion. Fig. 12 shows photographs of the patient.

Fig. 13 shows a case of cross-bite of the maxillary incisors and all of the right posterior teeth. Treatment required nine weeks. The cases in *C* show that the permanent teeth erupted in normal positions.



Fig. 13.—*A*, Three years, nine weeks' treatment. *B*, Aged 3 years, 3 months. *C*, Aged 7 years, 2 months.

Perhaps the average orthodontist does not want to bother with 3-year-old patients. I can assure you that these young children are the most satisfactory patients I have ever had. In most cases there is complete cooperation and no objection to my regular office routine. Occasionally one or two visits are required to get acquainted and gain their confidence. I take impressions and set appliances in the usual way. Appointments are seldom broken since the child usually is accompanied by his mother or nurse. The teeth are brushed regularly, no sticky candy is permitted, and instructions such as apply to the wearing of intermaxillary elastics are faithfully obeyed.

Regarding appliances, I use the simplest mechanisms adequate to get the best result in the shortest time. In my hands, seamless crowns or cast overlays are preferable to bands for anchor teeth. Labial or lingual arch wire appliances usually are suitable for these young patients. In cases of deep overbite of the maxillary anterior teeth, the use of bite plates is sometimes indicated before applying other mechanisms.

The diagnosis and consideration of malocclusion in the deciduous dentition are not matters that can be properly evaluated by mathematical rules, such as measuring the width of the maxillary dental arches, or according to the age of the patient, but should be determined by the judgment of the operator, based on experience and study, together with a thoughtful consideration of all the possible contributing etiological factors.

I believe that we all agree that normal occlusion and function of the deciduous dentition are not only desirable when considering the health, facial appearance, and happiness of a child, but are necessary in order that the occlusion and function of the permanent dentition may be entirely satisfactory. Orthodontic treatment of malocclusion in the deciduous dentition, which usually requires but a short period of time, may mean that instead of dental inefficiency, with possible pathologic complications, and an inferiority complex, an individual may have a good chewing mechanism, a normal facial development, and fewer dental ills throughout his entire life.

Each malposed deciduous tooth exerts an unfavorable influence on some of the permanent teeth. Postponement of treatment means that for several additional years all of the tissues associated with the jaws will be growing to harmonize with those jaws which are in abnormal positions. Therefore, the necessary natural readjustment of such tissues, during and after corrective orthodontic treatment, will be greater, will require more time, and the final results may not be entirely satisfactory.

It would be inconsistent with good reasoning to expect that in every case orthodontic treatment of deciduous dentitions will insure normal occlusion of the permanent teeth, or that later treatment will not be necessary, but if our treatment will produce a normal arrangement of the teeth in the dental arches and a normal relationship of the dental arches, we may feel certain that Nature will have a better opportunity to build a normal permanent chewing apparatus and that there will be an improved facial development. Our treatment also will provide normal function of the deciduous teeth during a period of rapid growth, the importance of which cannot be overestimated. Let us fulfill our professional obligations to these children and see that their foundation teeth are properly cared for.

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636 CHURCH ST.

SOME OBSERVATIONS ON THE PROGRESS OF ORTHODONTICS DURING THE PAST FIFTY YEARS

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INTRODUCTION

IN THE preparation and presentation of this paper I do not propose to present a treatise of a scientific nature but instead will attempt a chronological résumé of the progress of orthodontic developments that have placed the specialty in its high status in the dental field today.

Advances made in medicine and dentistry in the past fifty years both clinically and in the field of research have been no less than phenomenal. The dental specialty of orthodontics is no exception to this progressive trend, but has, as a matter of fact, been the leader in some of the outstanding advancements made in the dental profession.

These developments in the orthodontic field are even more remarkable in view of the fact that orthodontics as a specialty of dentistry did not come into existence until the year 1900.

HISTORICAL AND EDUCATIONAL DEVELOPMENTS

At the close of the nineteenth century the evolutionary process in "orthodontia"* had begun. Due to stimulated interest and a more careful study and application of fundamental principles of treatment by such men as Farrar, Jackson, Guilford, Case, and Angle, a much clearer conception of the orthodontic problem was being gained.

The accumulation and classification of orthodontic knowledge that was being compounded could not be attributed to any one man, or particular group of men, but seemed to be more of a general awakening on the part of interested individuals to the importance of the orthodontic field.

The Ninth International Medical Congress in 1887 seemed to be the first indication that a definite interest was being stimulated along the lines of orthodontic thinking. For it was at this meeting that the previously mentioned men, and others also, entered the field. Each man was attempting to outdo the others, and each was promoting his own particular ideas and concept of treatment procedures.

It is interesting to note that these men realized that orthodontics must eventually become a profession in itself, and at various times made statements to this effect either in their writings or lectures.

Victor Hugo Jackson, in the *Dental Cosmos* of 1890 (page 877),³² states, "Orthodontia will no doubt eventually become a distinct Specialty of dentistry,"

This thesis, which was given as a partial fulfillment of the requirements for certification by the American Board of Orthodontics, is being published with the consent and the recommendation of the Board, but it should be understood it does not necessarily represent nor express the opinion of the Board.

*The specialty originally was termed "orthodontia." However, in the middle and late 1930's agitation for a change to "orthodontics" was started, the latter being considered more modern in structure. The latter term, it now seems, has been almost universally accepted and will be so used in this presentation unless some particular early writing or statement is referred to.

and Calvin S. Case³² stated in 1893, "The practice of correcting irregularities of the teeth has advanced so rapidly under the influence of modern methods of constructing regulating appliances, that it bears today, little relation to dentistry proper, and in its most advanced practice may justly claim a distinct field in art and mechanics. Nor is the prophecy a wild one, that the science of orthodontia is destined to cover a still wider and more distinct field. It will not rest, or be satisfied with mere correction of malposed teeth, but will include as a part of its repertoire the correction of all facial deformities that have resulted from irregularities of the teeth and jaws."

These statements tend to show what was going on in the minds of these men who were to be listed among the pioneers in orthodontia.

However, Dr. Edward H. Angle was even more radical in his views. He felt that orthodontia and general dentistry were radically different, in reality, each being a specialty of medicine. Dentistry being a study of diseases of the mouth and orthodontia a study of the relationship of the teeth to the development of the face; not a part of dentistry, but a related profession.

After advocating the teaching and practice of orthodontia as a specialty in a paper before The Western Pennsylvania Dental Association in 1896, Angle attempted to induce the dental schools, at the American College of Dental Surgery (which later became Northwestern University) and later the University of Minnesota, to establish separate departments for the exclusive study and teaching of orthodontia. At both institutions he was unsuccessful in his efforts.

Due to these failures he conceived the idea of a separate school for the teaching of orthodontia exclusively. Consequently in 1900, in St. Louis, the first session of the Angle School of Orthodontia^{18, 33, 34} was held with four students in attendance. They were Henry E. Lindas, Herbert A. Pullen, Milton T. Watson, and Thomas B. Mercer.

The course was repeated as often as a sufficient number of men presented themselves for training. Each applicant was given a personal interview by Dr. Angle and if deemed capable of becoming an orthodontist they were accepted as students. If not, they were flatly rejected. If the student did not apply himself during the course he was promptly dismissed. The early courses were conducted for two- or three-month periods, but were gradually lengthened as time went on.

The Angle school was maintained in St. Louis until 1908. The following year, 1909, the course was held in New York, but in 1910 was moved to New London, Conn., where it remained until Dr. Angle moved to California. He never again engaged in active practice after leaving St. Louis. At some time during his stay in the East, Angle attempted to interest the University of Pennsylvania in a graduate course in orthodontia but failed as he had previously done at Northwestern and Minnesota.

Dr. Angle moved to California in 1916, because of ill health, and the school was conducted there by him and some of his students until 1926. During this period ten sessions of the school were held and 150 men were graduated.

This development, the establishing of a separate school for the teaching of Orthodontia by Dr. Angle, was the beginning of the orthodontic profession as a specialty in itself.

The founding and development of the Angle School gave impetus to the founding of other proprietary schools during the early part of the century. The first of these to be established was the International School of Orthodontia in St. Louis in 1907,²¹ by Dr. Benno Lischer and Dr. C. D. Lukens. The school was moved to Kansas City in 1908 by Dr. Wm. J. Brady and Dr. H. G. Tanzey. On Oct. 15, 1915, this school was incorporated by Dr. Brady and Dr. Tanzey, who had been an International School graduate in 1907.

This school was operated without interruption by Dr. Tanzey until about a year prior to his death in 1948.

Some of its staff of instructors were Dr. Brady, Dr. Tanzey, Dr. Harry Allshouse, Dr. George Hillias, Dr. Homer A. Potter, Dr. Homer B. Robison, and Dr. Wm. Kuhn (M.D.).

Upon the termination of the Angle School of Orthodontia in St. Louis, Dr. Martin Dewey, who was a graduate of the school as well as one of its teachers, established the Dewey School of Orthodontia in Kansas City. The school continued there for only a short time and then moved to Chicago, where several sessions were conducted. Then, in 1911, the Dewey School was opened in New York and was operated there by Dr. Dewey until the time of his death in 1932. It is still operating in New York as the Dewey School of Orthodontics.*

These privately owned and operated schools as well as training by preceptorships continued to be the source of formal orthodontic education, until about the year 1920.

However, soon after this, courses were offered on a graduate or postgraduate basis by such universities as Illinois, Columbia, and Michigan. This marked the peak of the proprietary schools, which from this time declined until today they are practically extinct. Training by preceptors has also declined so that, with the development of graduate departments in university dental schools throughout the country, the tendency of students seeking training as orthodontic specialists has been to attend the graduate departments of the dental colleges.

Today there are graduate courses being offered in a number of dental colleges, leading to additional degrees or presentation of a certificate at the conclusion of the course.

The list of colleges with these departments, the length of the prescribed course, and the type of award given upon its completion follows:

GRADUATE COURSES IN ORTHODONTICS OFFERED BY THE ACCREDITED DENTAL SCHOOLS OF THE UNITED STATES

Columbia University	16 months	Certificate
University of California	15 months	Certificate
University of Southern California	14 months	M.S.
Howard University	385 hours	
Emory University	2 years	Certificate
Northwestern University	15 months	M.S.D.
University of Illinois	18 months	M.S.
University of Indiana	18 months	M.S.
University of Iowa	Requirements and certification not clear	

*I believe it is the only proprietary school in existence today.

Tufts College	18 months	M.S.
University of Michigan	2 years	M.S.
University of Minnesota	18 months	M.S.D.
St. Louis University	2 years	M.S.
University of Kansas City	14 months	M.S.D.
Washington University	21 months	M.S.
Ohio State University	2 years	M.S.
Western Reserve University	36 sem. hours	M.S.
University of Pennsylvania	12 months	Certificate
University of Pittsburgh	1 year	M.S.
University of Tennessee	18 mo. (half-time)	Certificate
University of Washington	5 quarters	M.S.

There are also being conducted, at the present time, in various universities, short intensive postgraduate courses, open to men who have been actively engaged in orthodontic practice, for the purpose of instruction in the various mechanisms used in treatment today, and also several courses for the study of cephalometric appraisal of dentofacial discrepancies.

ORGANIZATIONAL AND LEGISLATIVE DEVELOPMENTS

As orthodontics developed as a specialty of dentistry it was only a natural reaction that an organization of the members of the profession would be formed for the study and advancement in this field.

In 1900 the establishing of such an organization, "The Society of Orthodontia," took place.

This was founded by Dr. Edward H. Angle and later was to become the American Society of Orthodontists. It was incorporated as such in February, 1917, by the following men in Pittsburgh, Pa.:

Dr. M. N. Federspiel	Milwaukee, Wis.
Dr. Frank M. Casto	Cleveland, Ohio
Dr. John V. Mershon	Philadelphia, Pa.
Dr. S. P. Cameron	Philadelphia, Pa.
Dr. D. Willard Flint	Wilkinsburg, Pa.

The name was later changed in 1938 to the American Association of Orthodontists, which is divided into eight constituent societies at the present time:

1. Northeastern Society of Orthodontists
2. Great Lakes Society of Orthodontists
3. Southern Society of Orthodontists
4. Southwestern Society of Orthodontists
5. Rocky Mountain Society of Orthodontists
6. Pacific Coast Society of Orthodontists
7. Central Section of the American Association of Orthodontists
8. Middle Atlantic Society of Orthodontists

The membership of the parent organization today embodies over a thousand members and is increasing each year.

It followed as a direct and important aftermath of the forming of the "Society of Orthodontia" that some medium should be available for the publication of new developments that were taking place. Thus was the publication

The American Orthodontist first published in June, 1907, and continued as a record of orthodontic thought and developments until October of 1912.

In addition to this publication there were two other American dental journals, the editors of which were interested enough in orthodontics to give space for the publication of papers and articles pertaining to the orthodontic field. The editor of the journal *Dental Items of Interest*, Dr. R. Ottolengui, made it a point to publish the proceedings of all the meetings of the American Society for twenty years, in addition to other articles which served to keep alive and stimulate interest in the profession.

Likewise, Dr. Edward C. Kirk, the editor of *Dental Cosmos*, was always receptive to orthodontic articles and made this journal available to the Eastern Association of Graduates of the Angle School for publication of the proceedings of their meetings as well as other pertinent orthodontic material and writings.

After the termination of the publication of the *American Orthodontist*, Dr. C. V. Mosby, of St. Louis,^{21, 22} who later became the founder and president of one of the largest firms publishing scientific books and journals in the world, issued the first number of the INTERNATIONAL JOURNAL OF ORTHODONTIA in January, 1915.

When Mosby first fell upon the idea of publishing the JOURNAL, the question arose concerning who should be chosen as editor. In view of the fact that Dr. Edward Angle was considered the outstanding man in orthodontics in the world at that time, it was decided to ask him to assume editorship of the new publication. A letter was sent to him giving details and asking if he would serve in this capacity. No answer was ever received to this letter, and the reason for his actions in this matter was never learned. It may have been that he felt the field too limited at this time to support a journal of this type. However, Dr. Martin Dewey, of Kansas City, was approached in regard to becoming editor-in-chief of the new JOURNAL, and he accepted.

Dewey was regarded as having one of the most brilliant minds in dentistry. However, he was considered somewhat of an eccentric, and made many enemies because of his outspoken remarks on controversial subjects.

The first issue of the INTERNATIONAL JOURNAL OF ORTHODONTIA was published in January, 1915. There were numerous difficulties in publication, and at times manuscripts were so difficult to obtain that Dr. Dewey wrote articles and inserted them so that the JOURNAL could meet the press deadline. However, the JOURNAL in all the years of its existence has never missed a month in going to press, many times under very adverse conditions.

Dr. Dewey continued as editor until 1932. At that time Dr. H. C. Pollock became editor, and he has held the position ever since.

Not long after its inception, Oral Surgery was included for a number of years, since the JOURNAL could not be made to pay its way on Orthodontics alone. The Oral Surgery was later dropped and Children's Dentistry added, which was in turn abandoned and Oral Surgery again added. Lack of sufficient articles of consequence in the Children's Dentistry field was the reason for eliminating it.

Several years ago the name was changed to the AMERICAN JOURNAL OF ORTHODONTICS, eliminating all other fields, and it has so remained ever since.

This present publication is the official organ of the American Association of Orthodontists, its component societies, and the American Board of Orthodontics. In addition to Dr. Pollock as editor-in-chief, there are eight sectional editors and two associate editors.

At the twenty-eighth annual meeting of the American Society of Orthodontists, in Estes Park, Colo., in 1929, upon the recommendation of the President, Dr. Albert H. Ketcham, the American Board of Orthodontics was formed.

The purpose of the Board is to stimulate research and self-improvement of those engaged in orthodontic practice, to establish the competence of specialists to practice orthodontics, and to arrange and conduct examinations for the purpose of testing the qualifications of orthodontists who apply for Board certification. The Board meets annually at a designated locality for the purpose of conducting these examinations.

In 1936 the American Board of Orthodontics, in conjunction with the American Association of Orthodontists, established the Albert H. Ketcham memorial award, in honor of the late Dr. Albert H. Ketcham, of Denver, Colo., one of the pioneers in the orthodontic field, who worked untiringly for the advancement of the orthodontic profession.

The award is presented each year to an orthodontist or some other individual who has made an outstanding contribution to orthodontics, either during that current year or at some previous time.

TECHNICAL DEVELOPMENTS

In the field of corrective mechanical therapy, numerous types of appliances were offered for the correction of malocclusion. Each man, in the early days, developed and designed the corrective appliance which he felt best suited for the individual case at hand. Needless to state, these were many and varied, and most treatment was confined to the moving of one tooth or a limited number of teeth into positions that improved esthetics to some degree.

However, with the development of orthodontics as a specialty, and with more men becoming interested in exclusive practice, there was an improvement in the appliances that were used. Cases were being treated with the idea in mind of improving the functional balance of the denture, as well as esthetic considerations. With this trend, the appliance design changed so that appliances could be utilized to the treatment of all cases rather than the construction of a device for each individual problem.

After the development of the McGill band, by Dr. McGill of Erie, Pa.,¹ in the latter part of the nineteenth century, this being the first band to be attached to the teeth by cement, tube attachments were designed which permitted the use of complete labial arch wires. Angle soon after developed his E arch. Case,⁷ and others as well, was using various types of labial and lingual combinations to bring about corrections.

Occipital anchorage was being used, but upon the advent of intermaxillary elastic force, which was brought out by Dr. H. A. Baker, of Boston,¹ and also employed by Case at about the same time, its popularity gradually decreased.

Most of the appliances in use at this time were made up of nickel silver, an alloy of copper, nickel, and zinc. Any soldering to be done on these appliances was usually done with a very low fusing silver solder; heat was kept at a minimum in order to prevent detempering of the nickel silver material. This precaution was especially necessary with the arch wires.

It soon became apparent that in a number of severe cases it was desirable to gain bodily movement of the teeth rather than the tipping action that was being effected by the appliances that were being used, which were for the most part heavy labial arches, with tooth control being effected by brass ligatures around the teeth or plain bands with various simple attachments.

In view of this desire to obtain bodily tooth movement, many different devices were developed to meet the situation. Most of them were highly impractical.

It was at about this time (1912) that Dr. Angle offered the "pin and tube" appliance to the profession. This appliance was efficient in operation and simple in design and embodied controlled bodily movement of individual teeth; however, because of the precision necessary in relocating the pins on the arch as the tooth positions changed, it was extremely difficult to manipulate. Dr. Calvin S. Case at about this same time was using several different types of attachments for bodily movement of individual teeth. In view of the disadvantages in the pin and tube appliance, Angle next developed the "ribbon arch" appliance (1916) which abandoned the tube principle for the bracket principle. Bands were placed on the individual teeth to be moved and the arch used was a flat arch wire which fitted the brackets accurately. The bracket engagement of the arch wire permitted the teeth to move along the arch wire as desired by the operator. The arch wire was placed in the bracket from the incisal surface of the tooth.

The later refinement of this appliance was the "edgewise arch" appliance (1925) which embodied the bracket principle with the bracket slot being placed labially instead of incisally and the arch wires used being of a lighter gauge. There has been little change made in this appliance up to the present time other than some improvement in materials and slight changes in bracket design.

Other types of appliances that have been developed and are in use today embody either the principle of the labial arch wire, such as the Universal appliance of Atkinson, or the lingual arch wire with finger springs as developed by Mershon, or a combination of both labial and lingual arch wires as used in the labiolingual technique as advocated by Oliver, or the Johnson twin wire appliance.

With the advancement and development of new mechanics there was also an improvement in the materials from which appliances were constructed. Alloys of gold and platinum first replaced the nickel silver, and later the high-grade chrome alloy steels were developed.

Today the precious metal alloys and the chrome steels are being used for arch wires as well as bands. The choice of materials depends upon the desires of the individual operator and the type of appliance and technique that is being used.

RESEARCH AND SCIENTIFIC DEVELOPMENT

During the early part of the century most of the orthodontic thought was confined to the perfection of mechanical appliances for the correction of malocclusion. Principles of appliances and their application in treatment were considered to be most important and little consideration was given to the causative factors that had created the condition or what the effect of application of force to the teeth by these mechanical devices would be at the conclusion of treatment. However, as the specialty progressed and more men became interested in the field, a broader concept of the principles involved developed. Progress had been made from the positioning of individual teeth for esthetic purposes to the consideration of occlusion as the basis of the science of orthodontia.

Angle's classification of malocclusion, based upon the recognition of normal occlusion, when accepted began to bring order from chaos, since it presented a common starting point for evaluation of dentofacial disturbances.

Thinking was becoming more coordinated, so that where initially the science was confined principally to a study of the teeth and their supporting structures only, there arose a desire to know more about the growth and development of the human body as a whole and an integration of the face and oral structures with this over-all picture.

The really first important research findings were those of Oppenheim,^{19, 25} in which he described his experiments and results of application of force to the teeth on the underlying bone structure of monkeys. Later (1936) he reported results of the same type of experiments on human subjects.

The importance of this work cannot be underestimated, in view of the fact that this was the first time that the profession had been given a clear picture of the changes that occur in tissues and the cellular activity by which they are produced. It enabled men to think in terms of cell activity rather than force application by mechanical means.

In his later works he showed that (1) there was apparently no orthodontic treatment possible that did not leave scars in the form of resorptions, and (2) he stressed the application of light gentle forces applied intermittently with long rest periods between to minimize the amount of tissue destruction.

Most of the pioneers in the profession were of the belief that normal occlusion of the teeth was the greatest single factor in the production of a beautiful face, and, as Angle¹ stated in his seventh edition (1907) of *Malocclusion of the Teeth*, "The Study of Orthodontia is indisputably connected with art as related to the human face," but he was also aware that "while all human faces are greatly alike, yet all differ."

The followers of Angle, and many others, held that in the correction of malocclusion, if teeth were moved into correct occlusal relationships with each other, and if normal vigorous function could be induced and maintained, the bone of the jaws would be stimulated to growth and would develop to support the dentures. This in turn would develop the face to so-called normal balance. Failure in treatment was attributed to failure to attain perfect cuspal relationship or a lack of stimulating function on the part of the patient. Even when

the end results of this concept of functional development of the human face seemed to be reasonably successful, there was a lack of uniformity in the facial pattern, in other words, even though normal occlusion had been established by orthodontic means or when the pattern of occlusion was normal to begin with, no definite law for the achieving of a normal facial pattern could be formulated.

One of the earliest investigators along these lines was Milo Hellman¹⁰ (1872-1947) whose anthropometric measurements on skulls, as well as head measurements of young adult males with normal occlusions, led him to conclude that there were three types of faces which could be classified as falling within normal range, namely, the convex, the straight, and the concave profile.

Other investigators working along these same lines were Todd and Broadbent. They arrived at the conclusion, however, that measurements taken on dead skulls constituted largely a record of defective growth. This, in addition to the uncertainty of locating skeletal landmarks through the skin and soft tissues of living subjects, led Broadbent to work on the development of a technique by which head measurements could be taken and accurately recorded by means of roentgenographic procedure. The end product of this work was the development of his "cephalometer," a device consisting of a head holder and x-ray machine, which permitted positioning the head in a uniformly unchanging position in relation to the central roentgenographic ray.

By locating several cranial points which showed little change as growth progressed, he was able to make comparisons of the cranial pattern by creating an assumed base and superimposing tracings of subsequent radiographic recordings over the original to record the progressive changes that were taking place in the developmental pattern. This he introduced in an article entitled, "A New X-Ray Technique and Its Application to Orthodontia."¹² Through the development of this technique and its application to a study of developing occlusions of over 5,000 Cleveland school children sponsored by the Bolton Foundation at Western Reserve University, Broadbent³ has been able to give us a progressive picture of the development of the human dentition and facial pattern.

Among important conclusions arrived at by this study are:

1. The form producing pattern of the head and face is established at a very early age (about 3 years) and undergoes little if any change thereafter.
2. "In children with retarded development the skeletal structures are inhibited in all three planes of space, therefore, it does not follow that expansion of the deciduous or mixed dental arches (by orthodontic means) can be expected to alter the supporting structures (particularly in the vertical dimensions) except the portions which offer immediate support to the teeth themselves."
3. That the face of the normal child develops downward and forward in an orderly fashion.
4. Certain stages of denture development, with which the orthodontist should be completely familiar, may be mistaken for conditions of malocclusion.
5. That so-called bimaxillary protrusion is due more to retarded development of the facial skeleton than to the denture being too far forward in relation to cranial base.

Following the advent of cephalometry other investigators, most of them working along lines similar to those employed by Broadbent, reported their findings.

Brodie, Downs, Goldstein, and Meyer⁶ concluded from cephalometric appraisal of orthodontic results that:

1. The orthodontist is able to move teeth without markedly disturbing their axial inclinations. Tipping is the predominating movement, however, unless great care is exercised to prevent it.

2. Actual bone changes during orthodontic treatment apparently were restricted to the alveolar process. The ability of this structure to adapt itself to changes in positions of the teeth seemed to be extremely great.

Brodie⁴ published a thesis in 1940, in which he corroborated Broadbent's findings regarding the orderly downward and forward development of the child's face, and, too, agreed that the morphogenetic pattern of the human head was established at an early age and once attained did not change.

Krogman¹³ stated in summarizing Hellman's statistics on facial growth as follows:

At birth 39 per cent of height, 57 per cent of width, measured against adult size, have been achieved.

In the first five years 78 per cent of height, 85 per cent of width and 82 per cent of depth have been achieved. This means that after five years of age only 15 to 20 per cent of growth increments remain as possible avenues of readjustment.

Tweed,²⁸ from clinical experience over a period of years, evolved a philosophy of orthodontic treatment based on facial esthetics and stability of result. His observations led him to contend that in normal occlusion the mandibular incisors are upright over basal bone, at approximately a 90-degree angle.

This contention¹⁵ was supported by cephalometric findings of Margolis,¹⁴ Noyes, Rushing, and Sims,²⁰ and Speidel and Stoner,²⁴ who have all written on the relation of the lower incisor teeth to the mandibular border. Margolis concludes:

There seems to exist a demonstrable relationship between the axial inclination of the mandibular incisors and the incisor mandibular plane angle; the greater the procumbency of the mandibular incisors, the greater the incisor mandibular plane angle in excess of ninety degrees, and vice versa.

Tweed,²⁹ Downs,⁸ and Margolis¹⁴ have further contributed to the studies of facial form and their application to orthodontic treatment in diagnosis and prognosis. The Frankfort mandibular plane angle as outlined by Tweed may be taken from measurements on the head and face of the patient clinically, or from lateral head x-rays.

This angle is formed by the intersection of the Frankfort horizontal plane, extended distally beyond porion, and the extension of the plane of the lower border of the mandible with the teeth in occlusion.

It was found that practically all human beings would present a Frankfort mandibular plane angle between 16 degrees and 55 degrees.

The higher the degree of angulation the less favorable are the prospects for successful conclusion of treatment, becoming not favorable at 35 degrees and

the prospects being practically nil as the extreme of 45 degrees to 55 degrees is approached.

Downs²⁸ analysis is probably the most comprehensive appraisal, and is based upon a facial pattern representing a mean or average form for individuals with excellent occlusions. The skeletal pattern in the lateral aspect is described in figures, and is appraised as good or bad according to the amount of deviation from the mean pattern.

Downs in his summary stated: "The relationship of the denture of any case to its skeletal pattern can be compared with known relationships of good balance and harmony. Such analysis tends to point out the desirable tooth movements indicated in treatment."

Margolis¹⁵ analysis is based on his maxillofacial triangle, a system of diagnosis similar to Downs, but not so complete.

Wylie³⁰ has produced a method of assessing anteroposterior dysplasia, and by "dysplasia" implies a random combination of craniofacial parts which may be neither abnormally large nor small, but, when taken together, produce an undesirable combination of parts.

He states,³¹ "I see malocclusion as disproportion between facial parts, parts which in themselves may be within the limits of normal variation, but which are disproportionate when combined with other facial structures and lead therefore to a disproportionate whole."

Brodie⁵ has written in essentially the same vein.

Analysis of malocclusion from the rest position of the mandible instead of from the closed jaw relation is advocated by Thompson,²⁷ who favors the terms "functional analysis" and "static analysis" to distinguish these positions.

Obviously it has been necessary to revise some accepted procedures in clinical practice in view of these cephalometric findings.

Proponents of extraction feel that the findings thus obtained in regard to the constancy of the facial pattern as well as the inability to effect changes in the basal bone pattern by orthodontic procedures have given support to their clinical findings.

As stated before, Tweed feels that the work of Broadbent, Brodie, and Margolis substantiates his contention that the mandibular incisors should be placed at a 90-degree angle to base bone. Originally he advocated the obtaining of this relationship by distal tipping of the buccal teeth and excessive expansion of the dental arches in the premolar and canine areas.

Strang²⁶ points out that this error has been recognized due to collapse of more of these overexpanded dentures after treatment, which accounts for the increase in the number of extractions now found necessary. He has tested his theories in this respect by elimination of retaining appliances in his practice.

He states as follows:

There is no question in my mind that denture expansion as a treatment procedure in the correction of malocclusion should be discarded and every effort should be directed toward preserving the muscular balance that is the most important factor in maintaining tooth position.

This factor had previously been pointed out by Bull from clinical observations, and Nance^{16, 17} and Howes¹¹ have written on the subject from the standpoint of the clinical orthodontist.

Fischer,⁹ Kloehn,¹² and others have advocated the use of occipital anchorage to replace or augment the mandibular teeth as the anchorage unit in Class II, Division 1 (Angle) treatment, since cephalometric as well as clinical evidence shows a forward movement of these teeth when used in this manner.

Needless to say the accumulation of this material has had a tremendous impact upon previously held orthodontic concepts from the standpoint of etiology as well as a realization of the limits within which the orthodontist is confined during treatment and the end results that may be expected at the conclusion of active tooth movement.

Generally speaking the etiologies of malocclusion may be divided into those that are hereditary, those that are environmental, or a combination of the two. With the advent of the theory of the morphogenetic pattern, more is being heard of the hereditary factors of etiology with the environmental factors being relegated into the background.

These findings have also caused the concept of functional development, previously mentioned, to be practically discarded by most of the orthodontic profession.

CONCLUSIONS

There has been tremendous change and advancement take place in the orthodontic field in the past fifty years.

The profession has developed from a small beginning with primarily a mechanical background for the so-called "regulating" of teeth, to its present plane of scientific research and clinical accomplishments.

This progress can be attributed to the sincerity of purpose, the untiring efforts, and the high capabilities of the early pioneers of the profession and their successors in the field of research as well as clinical practice.

The effect of the development of cephalometry has been a tremendous factor in this advancement that has taken place. While these changes were not immediately noticeable, once the value of the research findings obtained by its use was recognized, it has rapidly become a most important factor in orthodontic thinking.

A revaluation of many of the theories of etiology, analysis, prognosis, and treatment has of necessity been made, and the theories are continually being revised as orthodontics continues to progress to higher levels of professional achievement.

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Reports

REPORT OF THE EDUCATION COMMITTEE, AMERICAN ASSOCIATION OF ORTHODONTISTS, 1952

THE Education Committee, following the instructions given it by the Board of Governors of the American Association of Orthodontists, collected the several reports that had been rendered by itself to this Association and those rendered by the Committee on Orthodontics to the American Association of Dental Schools during the previous three years and turned them over to the AMERICAN JOURNAL OF ORTHODONTICS. To this was added the final report of the previous Education Committee under the chairmanship of Dr. L. M. Waugh. These reports were published in complete form in the January, 1952, issue of the JOURNAL.

In closing this aspect of its work the Education Committee desires to acknowledge with gratitude the help it has received from the members of this Association and those of the American Association of Dental Schools. Thanks are particularly due to Dr. Marian McCrea, Secretary of the American Association of Dental Schools, for permission to reprint the material from the transactions of the Association, and to Dr. H. C. Pollock, Editor of the AMERICAN JOURNAL OF ORTHODONTICS, for making possible the printing of the material in an issue of the JOURNAL.

Respectfully submitted,
L. BODINE HIGLEY,
THOMAS D. SPEIDEL,
ALLAN G. BRODIE, Chairman.

REPORT OF THE REFERENCE COMMITTEE ON THE PRESIDENT'S ADDRESS, AMERICAN ASSOCIATION OF ORTHODONTISTS, 1952

IT WAS a pleasure for the members of the committee to accept the appointment by Dr. Malcolm R. Chipman to study in greater detail and report to the Society on the president's address.

We concur, without exception, in the statements and recommendations contained in this address, and would like especially to re-emphasize the following:

1. We feel that the officers and members of the Association will approve, without dissent, the commitment vouching for the Association's willingness to cooperate in the guidance of public health policies.

Presented at the meeting of the American Association of Orthodontists, St. Louis, Mo., April, 1952.

2. In the interest of clarity, no effort should be spared in establishing a rational standard nomenclature, since much misunderstanding stems from confusing terminological concepts.

3. The encouragement of high ethical standards, although based on the precepts laid down by the national organization, is properly in the province of the sectional societies.

We wish to compliment Dr. deVries upon a report to the membership which, although modest, indicates, by its meticulous and thoughtful preparation, the thoroughness and good judgment with which the affairs of this Association have been administered during the past year.

Respectfully submitted,

NATHAN GASTON,

DONALD MACEWAN,

G. H. WILLIAMS.

Department of Orthodontic Abstracts and Reviews

Edited by

DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmnn, 654 Madison Avenue, New York City

Abstracts Presented Before the Research Section of the American Association of Orthodontists, April 23, 1951

Heat Treating Stainless Steel for Orthodontics: By W. A. Backofen, Sc.D., and George F. Gales, D.M.D., Tufts College Dental School, Boston, Mass.

A study is being made of the effect of a low-temperature heat treatment on the mechanical properties of stainless steel wire. The results of such a heat treatment are reasonably well known to mechanical and metallurgical engineers who frequently employ it to improve the elastic properties of cold-worked stainless steel sheet and rod. However, only a limited amount of work has been done with the severely cold-worked wires used by the orthodontist.

The present work is concerned primarily with the effects of the heat treatment and only secondarily with establishing the optimum heat treating conditions. Both edgewise arch wire and round wire are tested in the condition in which they are received, and also after heat treatment for various times at temperatures within the range of 500° F. to 820° F. Changes in mechanical properties are being measured principally by conducting tension tests on the as-received and heat-treated wires. In all cases, there is a marked improvement in the elastic properties and an increase in tensile strength after heat treatment.

Some experiments are also being performed with edgewise arch wire in which closing loops have been formed. Measurements are being made of the force-deflection characteristics of such loops after forming and also after forming and heat treating.

The Dentition of the Young Adult American Male: By John D. Friedlander, B.D.S. (New Zealand), Graduate School of Medicine, University of Pennsylvania.

This study of the dentition of the young adult American male was made upon 398 sets of upper and lower (matched) dental casts made from impressions taken upon students entering the freshman class of the Dental School, University of Pennsylvania. The following data were obtained from this material and evaluated statistically:

- I. The occlusion of the teeth and the character of the incisor bite.
- II. The size of the dental arches (width and length).
- III. Status of the third molar, viz., presence, congenital absence, state of eruption, its relationship to the position of the lower incisor teeth.
- I. The following criteria were employed as a standard of normal occlusion:
 - a. A fair degree of even alignment of the individual teeth with approximate symmetry of arch form.
 - b. Occlusal contact between the mesiobuccal cusp of the upper first molar and the buccal groove of the lower first molar, together with occlusal contact between the mesiolingual cusp of the upper first molar and the central fossa of the lower first molar.
 - c. The crowns of the upper incisor teeth vertically overlapping the labial portions of the incisal fourth to incisal one-half of the crowns of the lower incisor teeth.

The Angle classification was employed to classify the casts exhibiting malocclusion, the series exhibiting an incidence of malocclusion amounting to 85.44 per cent. The evaluation of the occlusion is represented below:

OCCUSION	NUMBER	PERCENTAGE
Normal	58	14.57
Class I	222	55.78
Class II, Division 1	28	7.04
Class II, Division 1, subdivision	20	5.03
Class II, Division 2	17	4.27
Class II, Division 2, subdivision	36	9.05
Class III	11	2.76
Class III, subdivision	6	1.51

The incisor bite was divided into the following five categories: 1. open-bite (no overlap); 2. edge-to-edge bite (contact of incisal edges); 3. slight (overlap of incisal fourth of lower crown); 4. moderate (overlap of incisal fourth to one-half of lower crown); 5. deep (overlap exceeding incisal half of lower crown). The following formula was used to evaluate and statistically analyze the bite in this series (represented by 392 casts):

$$\text{Average Bite} = \frac{\text{sum of (Classification} \times \text{Frequency in Each Class)}}{\text{Total Number of Casts}}$$

TYPE OF BITE	CLASSIFICATION	FREQUENCY	PER CENT FREQUENCY IN SERIES
Open	1	16	4.88
Edge to Edge	2	23	6.63
Slight	3	130	33.16
Moderate	4	161	41.07
Deep	5	59	15.05

Average, 3.56* Standard Deviation, 0.97

*The average bite in this series was therefore represented by a bite that was midway between a slight and moderate overlap of the upper over the lower incisor crown.

Examination of the casts demonstrated that there was a tendency toward a closed-bite in Class II and an open-bite in Class III cases.

II. *Size of the Dental Arches.*—The following points were located on the upper and lower model to determine arch width and length:

M-Point: Located in central pit of upper second molar.

C-Point: Located on lingual surface of upper canine at gingival margin, midway between mesial and distal surfaces.

R-Point: Located at the intersection of the midsagittal line with a line contacting the linguogingival margins of the upper central incisor teeth.

m-Point: Cusp point on distobuccal cusp of lower second molar.

e-Point: Located on lingual surface of lower canine at gingival margin, midway between mesial and distal surfaces.

r-Point: Located at the intersection of the midsagittal line with a line contacting the linguogingival margins of the lower central incisor teeth.

Width

MM—across M & M points.

CC—across C & C points.

mm—across m & m points.

Length

Upper arch, perpendicular distance from point R to line MM.

Lower arch, perpendicular distance from point r to line mm.

Arch width: There was no significant difference found in the means of MM (upper) arch width between normal occlusion and malocclusion, except in the Class II-1 cases. None at all existed in the mm (lower) arch width. The only

significant difference found between the mean MM (upper) arch width and the mean mm (lower) arch width occurred in Class I and the Class II-2, subdivision cases. There was no significant difference found in the means of CC (upper) arch width between normal occlusion and malocclusion except in the Class II-2, subdivision cases. None at all existed in the cc (lower) arch width. There was a significant difference between the mean CC (upper) and the mean cc (lower) arch width, both in the normal and in the malocclusion groups.

Arch length: There was no significant difference between the mean upper arch length in cases of normal occlusion and those in malocclusion except in the Class III series, while no significant difference occurred in lower arch length between normal occlusion and malocclusion. No significant difference was found between the mean upper and the mean lower arch length.

III. *Status of the Third Molar.*—The normal occlusion cases did not exhibit a higher frequency of *fully erupted third molars* than those having malocclusion. The most frequent site of fully erupted third molars occurred in the upper right quadrant, while the least frequent site of fully erupted third molars was in the mandible. There was a higher frequency of *partially erupted third molars* in the mandible. As there was need for additional data, i.e., x-rays, follow-up examinations, etc., in the study of unerupted and congenitally missing third molars, the original series of 398 cases was reduced to 186 cases where this information was available. *Unerupted third molars* occurred in 32.8 per cent of the 186 cases. The Class III cases showed a low incidence of this trait, being lower in the maxilla than in the mandible, whereas the reverse was found in the normal occlusion cases. In this series the Class II-1 and II-2, subdivision cases exhibited this characteristic only in the mandible. *Congenitally missing third molars* occurred in 12.9 per cent of the subjects in the following manner: normal occlusion, 1.3 per cent; Class I, 3.7 per cent; Class II-1, 4.5 per cent; Class III, 4.5 per cent. This latter series (186) was re-examined from 1½ to 2½ years after the original casts were made and the following was noted: An increased crowding with a decrease in the cc measurement in 3.28 per cent of the cases, a decreased crowding of the lower incisor teeth with an increase in cc measurement in 8.06 per cent of the cases. In both conditions, unerupted, partially erupted, and fully erupted third molars were found.

A New Line of Reference for the Study of Lateral Facial Teleradiographs:
By Dr. Lucien De Coster, Brussels, Belgium.

PRELIMINARY REPORT

The technique of facial lateral teleradiography-basal method of diagnosis and research work in dentofacial orthopedics has already reached a high level of perfection. Nevertheless, there are still some difficulties with the valuation or appraisal of the structural features of the radiographic image. Some of these difficulties are of morphological order, as, for instance, the determination of really fixed points, easily recognizable on the film and presenting sufficient exactness as to make them plainly valuable for measurement, comparison, or superposition.

The growth studies, the studies about the variation and anomaly of the cranial and facial bones have a great need of such basal facts. The more and more exacting appraisal of the bony structure of the face and teeth asks for very precise reference points outside the deformable area, outside the parts where growth can be influenced by external factors. Only the bones of actual neural growth of the facial bones are in action. So we can only use points on the internal side of the cranial bones, the external faces being continually reconstructed in connection with the varying and growing stresses of the function. Between the anatomical or morphologic points used in the appraisal of radiographic films only the sella turcica presents the needed conditions.

From the other points generally used we may distinguish:

a. *The nasion*: The nasion lies on the external wall of the frontal and nasal bones. Its position is very variable. At 2 years of age it lies at a distance of 5 mm. from the foramen caecum, while at adult age the distance is from 15 to 25 mm. from the foramen caecum. Its level in vertical direction is going downward during growth because the direction of the frontonasal suture is not horizontal but obliquely from behind to before and from below upward.

b. The *tragion* is a better point but it is not so easy to fix it on a radiograph. Some authors pretend that it undergoes some movements by the growth of the sphenoido-occipital suture, which is growing until 25 years of age.

c. The *Bolton point* is also an external point determined by the occipital condyles. Its localization is often obscured by the mastoid processes.

d. The *orbital point* of Simon is a point of mixed origin. It is variable by the growth of the orbit and the maxilla and subject to variation either by growth or function.

The landmarks just mentioned present a succession of points on the internal face on the most fixed parts of the skull basis forming a line in anteroposterior and vertical direction, able to serve as a good line of reference for measurement, comparison, and superposition.

I had the good luck to compare six radiographs of three children, two boys and one girl: (a) a radiograph at 7 years and a radiograph at 23 years; (b) a radiograph at 8 years and another at 21; (c) a radiograph at nearly 7 and at 18 years.

The three children are brothers and sister from the same parents. When I superposed the sella turcica-ethmoidofrontal line, i.e., the anterior lip of the sella turcica, the upper line of the sphenoid masses, the sphenoidoethmoidal suture, the lateral masses of the ethmoid, and the lamina cribrata, the encephalic face of the frontal cells and the foramen caecum, the internal osseous line of the frontal bone until above the crista-frontalis, I made the following discoveries: *that sella turcica-ethmoid-frontal line was absolutely identical on the six films and absolutely superposable.* The fact is of great importance and worth while to be investigated upon. Let us begin to say that that line is the exact reproduction of the anterior stage of the brain. The brain ceases development at 7 years. The skull basis after Testut, Harris, Sicher has its complete ossification at 7 years. That part of the skull has not the least interference with facial growth nor facial function.

The foremost lip of the sella turcica is one of the earliest parts of the skull basis to ossify and has according to Autissier and Beauvieux very close relations with the development of the internal pterygoid process, perpendicular to the nasion-opisthion line, a line parallel to the horizontal labyrinthine ring: organ of orientation.

The planum or the upper face of the sphenoid masses has direct connections in comparative anatomy with the horizontal apophysis of the maxilla. The lamina cribrata too is very old and has definite connections with the direction of the incisive canals in all animals. Thus we may call it a very interesting line definitely fixed before the growth of the maxillary and facial bones set in its development. All the other parts of the skull are growing and adapting. That part seems to be inalterable, nonmodifiable after 7 years, and not influenced by all sorts of ambient factors. It seems that that line can be used as a reliable point of reference for measurements of the same individual during growth, during malformation and orthodontic treatment. As we have seen that it remains unchanged in the same family for all the children without cranial anomalies it seems as if that line has fixed relations with the hereditary capital of the children of a given family. When we compare the sella turcica-ethmoidofrontal line of the children with the same line of the mother we see that there is no concordance.

OTHER MATERIAL

Beyond the three series of radiographs mentioned above we have at our disposal:

a. 25 cases of orthodontic treatment before and after treatment. In some of these cases the time interval was very long for two cases, more than ten years. In all of these cases there is not the least modification of the described line.

b. A large number of family radiographs (4 or 5 children). In all the cases the line is the same in all the children, even when the faces of the children are different.

c. 5 cases of monovular twins. In a case of a triplet with two monovular twins the three children show the same skull basis line.

d. A steadily increasing number of orthodontic patients have their tele-radiograph taken quarterly and the modifications appraised.

It is not yet possible to go into detail, but the exactness and the precision of that reference line are astounding. Further study will probably show us more of its real value.

Facial Growth Standards Based on Cephalometrics:

a. **Findings for the 5-, 6-, and 7-Year-Old Group:** By R. M. Nelson.

b. **Findings Compared With Others Reported in the Literature:** By R. H. Ervin.

c. **Changes Occurring Within the Group With Age:** By R. C. Geiger. University of Iowa, Iowa City.

From the 140 children enrolled in the State University of Iowa Facial Growth Study, standardized profile roentgenograms of 25 boys and 25 girls possessing so-called normal occlusions were selected for study. Roentgenograms taken at their fifth, sixth, and seventh birthdays were traced and certain angular and linear measurements determined. Means and standard deviations were derived for each age and these were then compared with findings previously reported in the literature by other investigators. The findings acquired in this study at 5 years were also compared with those at 7 to see if any of the linear or angular measurements changed and in what direction and to what extent.

Further Studies on Mandibular Condyle Movements: By G. L. Fraseur.

The movements of the condyle during opening and closing movements of the mandible still arouse some controversy. A previous study at the University of Iowa showed that the condyle always drops immediately as the mandible opens from centric relationship and usually moves forward. Studies elsewhere indicate that in the first phases of mandibular opening the condyle acts as a hinge with no movement taking place. Since condyle position has orthodontic diagnostic significance, it was decided to repeat the S.U.I. study using a different approach in order to support or reject the previous findings.

Re-evaluation of the Orbital Plane: By R. H. Knarr.

Certain studies have indicated that the relationship of the denture to the orbital plane as reported by Simon was not substantiated. In this study individuals having good dentofacial relationships were used and the attempt was made to produce gnathostatic casts following Simon's technique as accurately as possible in order to test his findings and thus decide whether his so-called law of the canines has clinical significance.

The Sella Turcica Size at 4, 5, and 6 Years: By R. B. Norris.

The size of the sella turcica may be important in orthodontic diagnosis. Nothing is reported in the literature about the size of this structure from the age of 5 through 7 years. This report is an attempt to arrive at a standard for sella turcica size for this age range.

News and Notes

American Association of Orthodontists

When the American Association of Orthodontists meets in Dallas, Texas, April 26 to 30, 1953, the Baker Hotel will be the headquarters hotel. Dallas has complete facilities to make it one of America's leading convention cities—more than 130 hotels, large and small, and 90 tourist courts, with total guest capacity of around 25,000; diversified entertainment and recreation; thousands of square feet of exhibit space; and wholehearted hospitality on the part of the citizenship. Dallas' eight largest downtown hotels, including the Hotel Adolphus and the Baker Hotel (Fig. 1), have a total of more than 3,500 rooms alone. Hundreds of independent oil operators, many of them with interests in all the major Mid-Continent fields, make their headquarters in Dallas. The city is also headquarters for drilling contractors, lease and royalty brokers, and allied interests.

OUTLINE OF ESSAY PROGRAM

Spencer R. Atkinson, Pasadena, Calif. Early Treatment.

Ernest N. Bach, Toledo, Ohio. Incidence of Caries in Orthodontic Patients.

Dr. Henry Beyron, Stockholm, Sweden. Aging Changes in Adult Dentition and the Preservation of Supporting Tissues.

Elena Boder, M.D., Los Angeles, Calif. Facial Asymmetry in the Newborn Infant; Its Etiology and Orthodontic Significance.

Gerard J. Casey (A.D.A.), Chicago, Ill. Orthodontic Education.

S. Fastlicht, Mexico City, Mexico. Treatment of Impacted Cuspid.

T. M. Graber, Chicago, Ill. An Up-to-the-moment Review of the Clinical Adaptation of Cephalometry as a Diagnostic Aid.

L. B. Higley, Iowa City, Iowa. Rational Approaches in Orthodontic Diagnosis.

A. F. Jackson, Philadelphia, Pa. The Nature and Place of Removable Appliances in Orthodontic Treatment.

Allen H. Suggett, Santa Barbara, Calif. The Correction of a Mandibular Macrogathia by Surgical Means by Resecting the Ascending Ramii Just Below the Joints, the Operation Being Done From the Outside. A Study of Pioneer Operation Performed in 1930, and Predicated Upon Careful Gnathostatic Diagnosis and Orthodontic Preparation.

Paper prepared under direction of Robert E. Moyers, Toronto. Intraoral Factors Affecting Case Assessment.

Walter J. Pelton (U.S.P.H.S.), Washington, D. C. Orthodontics From the Public Health Viewpoint.

H. C. Pollock, St. Louis, Mo. Orthodontic Trends.

J. A. Salzmann, New York, N. Y. General Growth Acceleration and Retardation in Relation to Dentofacial Development.

Arnold E. Stoller, Seattle, Wash. The Normal Position of the Maxillary First Molar

John R. Thompson, Chicago, Ill. Normal and Abnormal Function of the Temporomandibular Joints.

Clifford L. Whitman, Hackensack, N. J. Habits Have Gotten to Be a Habit With Me. Prize Essay. Speaker to be announced later.

Symposium. Five case reports by members using different types of appliances and technique in the treatment of a typical distocclusion case.

<i>Appliance</i>	<i>Speaker</i>
Edgewise	F. F. Schudy, Houston, Tex.
Universal	Don C. MacEwan, Seattle, Wash.
Labiolingual	William H. Oliver, Nashville, Tenn.
Removable	S. D. Gore, New Orleans, La.
Twin arch	Earl E. Shepard, St. Louis, Mo.

The National Railways of Mexico General Agency, 2401 Transit Tower, San Antonio 5, Texas, has arranged an all-expense post-convention tour for members of the American Association of Orthodontists and their families who care to visit Mexico City following the 1953 convention.

The tour will leave Dallas in special cars immediately after the convention, bound for Mexico City and a visit to interesting places in Mexico.

For further information please address: Mr. F. Alatorre, National Railways of Mexico, 2401 Transit Tower, San Antonio 5, Texas.

ENTERTAINMENT RESERVATIONS FOR THE MEETING

ALL SOCIAL AFFAIRS STRICTLY INFORMAL			NUMBER	COST
<i>Sunday, April 26</i>				
6:30 P.M.	Cocktails and Buffet	\$6.00		
<i>Monday</i>				
12:30 P.M.	Golden Anniversary Luncheon	\$4.00		
6:30 P.M.	Stag Dinner—Cocktails and Dinner	\$7.50		
6:30 P.M.	Ladies' Cocktails and Dinner	\$6.00		
<i>Tuesday</i>				
12:30 P.M.	International Luncheon	\$4.00		
12:30 P.M.	Ladies' Luncheon and Fashion Show	\$4.00		
<i>Wednesday</i>				
10:00 A.M.	Tour of Dallas	\$2.00		
6:30 P.M.	President's Cocktail Party and Dinner Dance	\$8.50		
Enclose check for total cost			\$	

Only signed reservation sheets will be honored. Preference will be given according to *post-mark* date.

Send check made payable to Dr. Frank Roark, 4150 Mockingbird Lane, Dallas 5, Texas.

Please print signature -----

Address -----

Member of A.A.O. Section -----

Associate member -----

Guest of A.A.O. Section -----

Please fill in, tear out, and mail immediately.

ENTERTAINMENT FOR THE LADIES, A. B. CONLY, CHAIRMAN

HOSTESSES

Mrs. Brooks Bell
Mrs. James W. Ford
Mrs. Clare K. Madden
Mrs. Franklin A. Squires
Mrs. Bibb Ballard
Mrs. A. B. Conly
Mrs. W. Harrell Delafield

Mrs. Joe Favors
Mrs. Robert E. Gaylord
Mrs. G. A. McJimsey
Mrs. Julius Tomlin
Mrs. Tom M. Williams
Mrs. Horace E. Wood

All social affairs strictly informal.

Sunday

6:30 to 8:00 Cocktails and Buffet, Peacock Terrace of the Baker Hotel. (Informal.)
Tickets, \$6.00 per person.

Monday

Adolphus Hotel

6:30 Cocktails, Danish Room.
7:30 Dinner, Roof Garden. (Informal.)
Tickets, \$6.00 per person.

Tuesday

12:00 Ladies' Luncheon, Mural Room, Baker Hotel.
Neiman Marcus Fashion Show.
Tickets, \$4.00 per person.

Wednesday

10:00 to 12:00 A Tour of Dallas.
Tickets must be obtained before 5:00 Tuesday at the registration desk on the mezzanine of the Baker Hotel.
Tickets, \$2.00 per person.

6:30 The President's Cocktail Party, Peacock Terrace of the Baker Hotel.
7:30 The President's Dinner Dance, The Crystal Ball Room of the Baker Hotel.
(Strictly informal.)
Tickets, \$8.50 per person.

ENTERTAINMENT FOR THE MEN (ROBERT E. GAYLORD, CHAIRMAN)

All social affairs strictly informal.

Sunday

6:30 to 8:00 Cocktails and Buffet, Peacock Terrace of the Baker Hotel. (Informal.)
Tickets, \$6.00 per person.

Monday

12:30 The Golden Anniversary Luncheon.
The members of the American Association of Orthodontists, honoring our members who have been in the practice of dentistry fifty years or more.
Mural Room, Baker Hotel.
Tickets, \$4.00 per person. (Guests invited.)

6:30 Cocktails, Peacock Terrace of the Baker Hotel.
7:30 Dinner, Peacock Terrace of the Baker Hotel.
Tickets, \$7.50 per person.

Tuesday

12:30 The International Luncheon, Peacock Terrace, Baker Hotel.
Tickets, \$4.00 per person.

Wednesday

12:30 The Past Presidents' Luncheon, English Room, Baker Hotel.

6:30 The President's Cocktail Party, Peacock Terrace of the Baker Hotel.
8:30 The President's Dinner Dance, Crystal Ball Room of the Baker Hotel.
(Strictly informal.)
Tickets, \$8.50 per person.

Local Committees for Dallas Meeting of American Association of Orthodontists**LOCAL ARRANGEMENTS**

Tom M. Williams, Chairman Medical Arts Bldg. Dallas, Texas	Frank Roark, Treasurer 4150 Mockingbird Lane Dallas, Texas	
Bibb Ballard A. B. Conly W. Harrel Delafield Joe Favors	Nathan G. Gaston Robert E. Gaylord G. A. McJimsey	Julius Tomlin Horace E. Wood William M. Younger

REGISTRATION

Franklin A. Squires, Co-chairman W. Harrel Delafield G. A. McJimsey Frank Roark	Bibb Ballard, Co-chairman Julius Tomlin Horace E. Wood
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INFORMATION

Horace E. Wood, Chairman	
S. D. Terrell	G. C. Turner

RECEPTION

Robert W. Gaston Walter Lipscomb	W. Harrel Delafield, Chairman Hugh A. Sims J. C. Williams
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PRESS

Joe Favors, Chairman		
G. A. McJimsey	J. A. Rowe	Harry H. Sorrels
	Thermon B. Smith	

EXHIBITS

Nathan G. Gaston, Chairman		
J. E. O'Donnell	J. E. Roak	Horace E. Wood

CLINICS

Julius Tomlin, Chairman		
John W. Conly James C. Hart Emily T. Hicks T. M. Matthews	William M. Pugh Lee O. Rogers Frank Roark Thermon B. Smith	W. Kenneth Thurmond W. Wayne White

PROPERTY

Frank Roark, Chairman		
John W. Conly James C. Hart	Julius Tomlin W. B. Stevenson, Jr.	

LADIES ENTERTAINMENT

A. B. Conly, Chairman		
W. Harrel Delafield Robert E. Gaylord	G. A. McJimsey Horace E. Wood	

Hostesses

Mrs. Brooks Bell	Mrs. A. B. Conly	Mrs. G. A. McJimsey
Mrs. James W. Ford	Mrs. W. Harrel Delafield	Mrs. Julius Tomlin
Mrs. Clare K. Madden	Mrs. Joe Favors	Mrs. Tom M. Williams
Mrs. Franklin A. Squires	Mrs. Robert E. Gaylord	Mrs. Horace E. Wood
Mrs. Bibb Ballard		

MEN'S ENTERTAINMENT

Robert E. Gaylord, Chairman

Bibb Ballard
A. B. Conly
Joe Favors

T. M. Matthews
Julius Tomlin

Tentative speakers at the meeting are as follows:

Spencer R. Atkinson. Early Treatment.

Ernest N. Bach. Incidence of Caries in Orthodontic Patients.

Henry Beyron, Stockholm. Aging Changes in Adult Dentition and the Preservation of Supporting Tissues.

Elena Boder, M.D. Facial Asymmetry in the Newborn Infant; Its Etiology and Orthodontic Significance.

Touro M. Garber. An Up-to-the-moment Review of the Clinical Adaptation of Cephalometry as a Diagnostic Aid.

L. B. Higley. Rational Approaches in Orthodontic Diagnosis.

Andrew F. Jackson. Are Multiple Bands Necessary in Orthodontic Treatment?

Robert E. Moyers' Group, Toronto. Intraoral Factors Affecting Case Assessment.

Shailer Peterson (A.D.A.). Undergraduate and Graduate Orthodontic Education.

Note. Dr. Peterson is not quite certain that he can be with us. May have his associate, Dr. Casey, in his place.

H. C. Pollock. Orthodontic Trends.

J. A. Salzmann. General Growth Acceleration and Retardation in Relation to Dento-facial Development.

Arnold E. Stoller. The Normal Position of the Maxillary First Molar.

John R. Thompson. Normal and Abnormal Function of the Temporomandibular Joints.

Clifford L. Whitman. Habits Have Gotten to Be a Habit With Me.

S. Fastlicht, Mexico City. Treatment of Impacted Cusps.

Symposium: Treatment of a Typical Distocclusion Case.

5 case reports—15 minutes each.

Edgewise Appliance. F. F. Schudy, Houston, Texas.

Universal Appliance. Donald C. MacEwan, Seattle, Wash.

Labio-Lingual Appliance. William H. Oliver, Nashville, Tenn.

Removable Appliance. Samuel D. Gore, New Orleans, La.

Twin-arch Appliance.

A.B.O. Exhibit, showing material submitted to the Board in 1952.

Also Research Session, Tuesday evening.

According to Chairman Ernest Bach of the Golden Anniversary Luncheon Committee of the American Association of Orthodontists, the following members (listed chronologically) are eligible to attend the Golden Anniversary Luncheon to be given in Dallas. These members have all been in practice fifty years or more:

FIRST GOLDEN ANNIVERSARY GROUP, AMERICAN ASSOCIATION OF ORTHODONTISTS, 1953

<i>Year Graduated</i>	<i>Years Out of School</i>	<i>Name and Address</i>
1889	64	John V. Mershon.†
1890	63	Norris C. Leonard, Bennie Dillon Bldg., Nashville, Tenn.
1892	61	E. Santley Butler, 524 North Ave., New Rochelle, N. Y.
1893	60	Allen H. Suggett, Mission Inn, Santa Barbara, Calif.
1895	58	Frederick B. Noyes, 1866 N. Sheridan Rd., Highland Pk., Ill.
1896	57	Alfred M. Desnoes, 389 Brower Ave., Rockville Centre, N. Y.
	57	Alfred P. Rogers, 20 Chapple St., Brookline, Mass.
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American Board of Orthodontics

The next meeting of the American Board of Orthodontics will be held at the Baker Hotel, Dallas, Texas, April 22 to April 26, 1953.

†Died Feb. 18, 1953.

Central Section of the American Association of Orthodontists

The next annual meeting of the Central Section of the American Association of Orthodontists will be held at the Edgewater Beach Hotel, Chicago, Ill., on Oct. 19 and 20, 1953.

Pacific Coast Society of Orthodontists

The following officers of the Pacific Coast Society of Orthodontists have been elected for the years 1953-1955:

President, Dr. Arnold E. Stoller, Seattle, Wash.
President-Elect, Dr. A. Frank Heimlich, Santa Barbara, Calif.
Vice-President, Dr. Vernon L. Hunt, Eureka, Calif.
Secretary-Treasurer, Dr. Raymond M. Curtner, San Francisco, Calif.
Director to the A.A.O., Dr. Arnold E. Stoller, Seattle, Wash.
Alternate to the A.A.O., Dr. Frederick T. West, San Francisco, Calif.

University of Washington, School of Dentistry, Department of Orthodontics

The University of Washington announces that it is receiving applications for its next graduate class in orthodontics, which will begin the latter part of September, 1953. This course leads to a Master of Science degree, or Certificate for qualified candidates. Additional information may be obtained by writing the Director of Graduate Dental Education, University of Washington, School of Dentistry, Seattle 5, Wash.

St. Louis Society of Orthodontists

A meeting of the St. Louis Society of Orthodontists will be held May 25 at Washington University School of Dentistry.

The program will be a panel discussion under the direction of Dr. Joseph Williams. The subject will be "Factors That Influence the Timing of Orthodontic Treatment." Members of the panel will be Drs. Earl Bean, Everett W. Bedell, and Edward W. Hodgson.

European Orthodontic Society

The Twenty-ninth Congress of the European Orthodontic Society will be held at the famous Monte Carlo in the lovely month of May (May 10 to 14) under the presidency of Dr. Georges Gugny, of Paris. The subject of the Congress is "Prognosis in Orthodontics."

The Côte d'Azur has been chosen for the Congress because of its lovely setting and the exceptional tourist facilities offered by the Principality of Monaco. His Highness the Prince of Monaco has given permission for the Congress to be held and has offered every facility to the Society.

The French Railways are giving a reduction of 30 per cent on travel tickets for over 2,000 kilometers. Application may be made to any travel bureau of French Railways Limited or their agents. There is a very good air service to Nice airport.

The European Orthodontic Society will be followed immediately by the meeting of the Société Française d'Orthopédie Dento-Faciale from May 14 to 17. There is to be a combined demonstration meeting on May 14.

American orthodontists may attend the European Orthodontic Society's Congress on payment of a "Visitor's" fee of £2. Full membership fees are: entrance fee, £2, annual subscription, £3 up to age 32, £4, age 32 and over. Application for membership should be made to the Honorary Secretary, Norman Gray, 16 College Road, Eastbourne, Sussex, England, or the Assistant Honorary Secretary, B. Beck, 118 Rue du Maréchal Joffre, Colombes (Seine), France.

College of Dentistry, The Ohio State University

To meet the needs of dentists who wish advanced training in orthodontics, the College of Dentistry, Ohio State University, offers three orthodontic curricula: (1) full-time graduate

study for two academic years, (2) full-time postgraduate work for eighteen months, and (3) part-time postgraduate work for twenty-four months.

Graduate work is available for those who wish to receive training in orthodontic specialization, teaching, or research, and may lead to a degree of Master of Dental Science. It is also possible to register for a postgraduate course in orthodontics and at the same time enroll as a candidate for the degree of Master of Science in one of the basic sciences such as anatomy or pathology.

The full-time postgraduate course is given for six consecutive quarters. The part-time postgraduate course is designed for dentists who have established their practices within reasonable distances of Columbus and prefer to continue those practices on a limited basis while studying for specialization. Classes are conducted the first three days of each week for eight consecutive quarters.

Certificates are granted by the College of Dentistry upon satisfactory completion of the postgraduate courses.

Admissions to all three curricula are for the Autumn Quarter of each year and classes start about the first of October.

All correspondence relating to advanced training in orthodontics should be addressed to the College of Dentistry, Ohio State University, Columbus 10, Ohio.

Orthodontic Treatment

On November 19 Mr. Mithiscon (*Kettering*) asked the Minister of Health what estimate he had made of the average time taken by the Dental Estimates Board to sanction applications for orthodontic treatment, and whether he was satisfied that delays in sanctioning did not prejudice treatment in the first, or subsequent stages.

In a written reply the Minister stated that he was informed by the Dental Estimates Board that the average time taken was five weeks. He had no evidence that treatment was prejudiced.

Federal Security Agency, Social Security Administration, Children's Bureau

Americans could do a tremendous job of preventing crime, unhappiness, and mental illness if they would carry out the objective of Child Health Day for 1953, Federal Security Administrator Oveta Culp Hobby said today.

Child Health Day, proclaimed by President Eisenhower for May 1, 1953, is the day on which all Americans are urged "to increase their understanding of the emotional, social, and spiritual growth of children, so as to apply this understanding in their day-to-day relations with the rising generation."

"We know," Mrs. Hobby said, "that children who do not get the chance to develop their fullest capacities in each stage of their growth run larger risks of growing into maladjusted, unhappy, and not fully productive adults.

"All along the way we see evidence that the knowledge we have about child growth is not being fully applied. We see it in mounting juvenile delinquency rates, in a fantastically large national crime bill, in mounting numbers of emotionally disturbed, mentally ill people.

"There is nothing that leads us to believe that people are born juvenile delinquents or criminals. And it is in their childhood that tendencies in these directions first appear.

"If, as parents, we can understand more about the growth processes of childhood, we increase the chances that our children can develop the emotional and mental strength required to live happy, useful, and satisfying lives."

Mrs. Hobby said that those who are interested in learning more about the stages of growth can start with no better material than *A Healthy Personality for Your Child*, a booklet published by the Children's Bureau. It sums up in popular form what we know today of how children grow emotionally and has a companion Discussion Aid for groups which want to talk over the problems they encounter in rearing and working with children.

"The Children's Bureau is proud to join with the State and local health departments, traditional sponsors of Child Health Day activities, in their observance of May Day," Mrs. Hobby said. She has asked the Bureau to inform citizens' organizations and interested individuals of the objective of the Day's observance.

"If every citizen organization in every community, if every religious group, every professional group devoted a single meeting, or even part of it, to a discussion of *A Healthy Personality for Your Child*, millions of our citizens would have a greater awareness of what they can do to help our children develop along lines which lead to happy, productive maturity," the Administrator said.

The 1953 observance marks the twenty-fifth year Child Health Day has been observed by presidential proclamation. It was authorized by a joint congressional resolution, passed in 1928, which called attention to "the fundamental necessity of a year-round program for the protection and development of the Nation's children."

Mrs. Hobby said, "In the quarter century since President Coolidge issued the first Child Health Day Proclamation, through new medical and scientific discoveries and extensive public health work, our country has made tremendous advances in overcoming many of the great physical hazards which used to threaten children.

"In the words of President Eisenhower, 'We are now seeking to make as significant progress in understanding the nature of emotional health in order that our children may grow into mature, responsible citizens of a democracy.'"

Notes of Interest

Matthew M. Kaufman, D.D.S., announces the opening of offices at 55 Cedar Drive near Bayview Ave., Great Neck, N. Y., practice limited to orthodontics; New York City office continued at 120 Central Park South.

Dr. E. R. McCallon, Jr., has returned from active duty with the United States Navy and announces that he has resumed the practice of orthodontics in association with Dr. A. C. Broussard, 1116-18 Maison Blanche Bldg., New Orleans, La.

Dr. Russell Winston announces the removal of his office to 4205 Caroline, Houston, Texas, practice limited to orthodontics.

OFFICERS OF ORTHODONTIC SOCIETIES

The AMERICAN JOURNAL OF ORTHODONTICS is the official publication of the American Association of Orthodontists and the following component societies. The editorial board of the AMERICAN JOURNAL OF ORTHODONTICS is composed of a representative of each one of the component societies of the American Association of Orthodontists.

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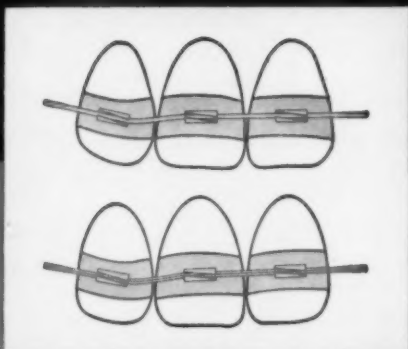
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Although whole blood for the wounded in Korea and the thousands in civilian hospitals receives, and will receive, top priority, there is a mounting need for a blood plasma reserve as insurance against a national emergency. Therefore, the mission of the new National Blood Program is threefold: to obtain sufficient quantities of blood to continue to meet the needs of the Armed Forces and civilians and, at the same time, to build a plasma reserve large enough and mobile enough to see us through any national emergency.

The National Blood Program was established because military, civilian, and civil defense blood needs must be met on a continuing, comprehensive, long-range basis with all blood collection activities integrated into a single program. The American National Red Cross, which is the official collecting agency in cooperation with several affiliated blood banks, the Department of Defense, and the Federal Civil Defense Administration have joined forces to conduct this program.

Men and women in the medical field can help by donating their blood and by telling their friends and neighbors of the constantly growing importance of blood therapy and the urgent need for a plasma reserve in the event of a national emergency.

To keep America strong and secure, blood must continue to flow from the veins of the healthy to those in need. Giving blood is a civic and moral responsibility of all healthy adults. Be a regular blood donor and protect the health of your community and your nation.

He Went Out to Meet Them

WITH FLARES AND WHISTLES and blaring bugles, the Reds had been attacking fanatically all night. Wave after wave they came, in overwhelming numbers.

By dawn, Jerry Crump could see that his position alone was keeping them from overrunning L Company. Twice he went out to meet them with his bayonet. Once he retook a captured machine gun. And four times he left shelter to bring in wounded comrades.

Now, an enemy soldier crept close unobserved. He lobbed a grenade. It landed squarely among the wounded men. Without a second's hesitation, Corporal Crump threw himself upon it, smothered the explosion with his own body, and saved his four companions' lives.

"I got hurt," says Jerry Crump, "but I got back alive. Because our armed forces have the finest medical equipment in the world—even at the front. And you helped put it there by investing in U. S. Defense Bonds."

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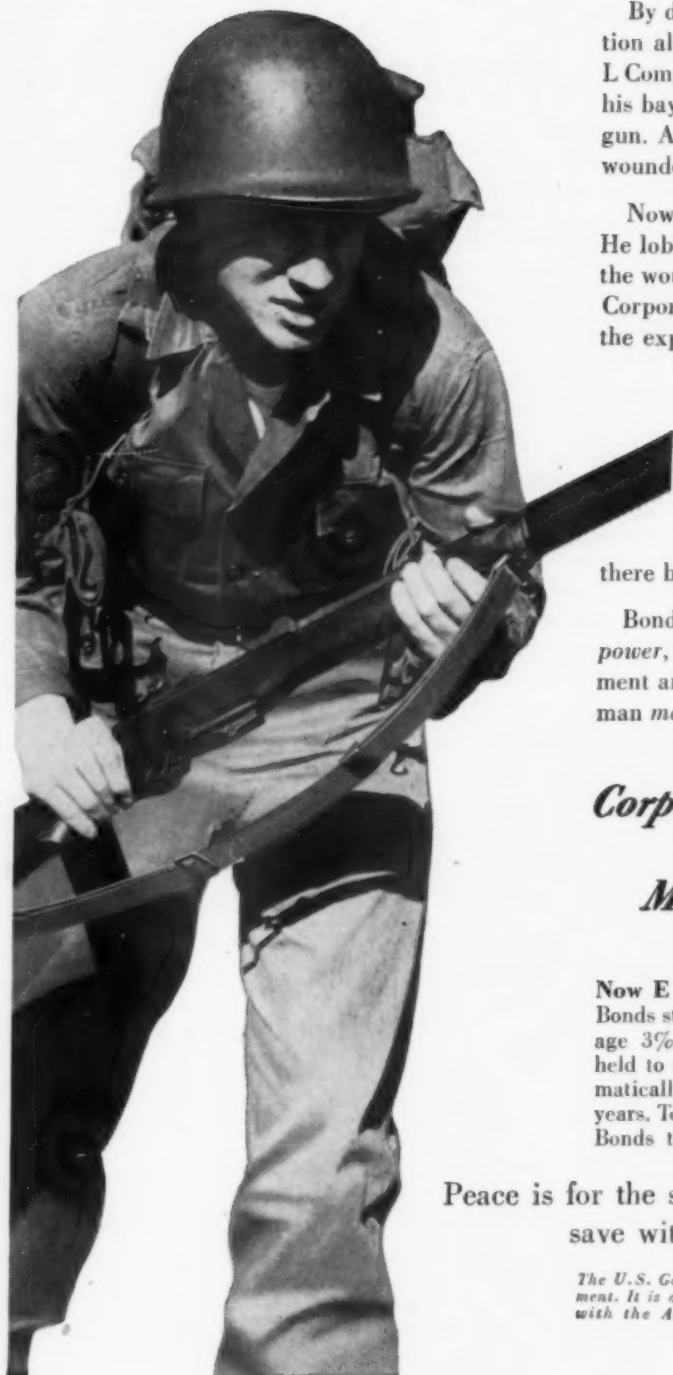
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(1) any sore that does not heal (2) a lump or thickening, in the breast or elsewhere (3) unusual bleeding or discharge (4) any change in a wart or mole (5) persistent indigestion or difficulty in swallowing (6) persistent hoarseness or cough (7) any change in normal bowel habits. Any one of these symptoms should mean a visit to your doctor. Most cancers are curable *if treated in time!*

You and Ed will also learn that your best "insurance" against cancer is a thorough health examination every year—twice a year if you are a man over 45 or a woman over 35.

For information on where you can see this film, call us or write to "Cancer" in care of your local Post Office.

American Cancer Society

"MAN ALIVE!" is the story of Ed Parmalee, whose fear weakens his judgment. He employs denial, sarcasm and anger to avoid having his car properly serviced and to avoid having *himself* checked for a symptom that may mean cancer. He finally learns how he can best guard himself and his family against death from cancer.



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Proceeds of the annual national Buddy Poppy sale, conducted by the Veterans of Foreign Wars, are used exclusively to carry on the organization's extensive welfare and service program for veterans and their dependents and for survivors of veterans. Primarily dedicated to serving disabled and needy comrades, the only requisites needed to obtain V.F.W. assistance are that they served their country honorably and that their claims for aid are worthy.

Disabled veterans in government hospitals and soldiers' homes actually do the work of assembling the Buddy Poppies, and they receive compensation for their work—work which not only has proved of real therapeutic value but also provides extra spending money so that the men may buy some of the little special comforts.

The Sale of the Buddy Poppies, each identified by a copyrighted green label as the genuine handiwork of disabled and needy ex-service men, is primarily concerned with raising funds for three major purposes: to help maintain the V.F.W. National Home for war orphans and widows; to carry on a nation-wide service and rehabilitation program through the national and state organizations of the V.F.W.; and to provide a wide range of veteran welfare work in thousands of communities.

When a patriotic citizen gives ten cents for a Buddy Poppy, five cents stays right in the community with the local post; one and one-half cents go to the V.F.W. state welfare program; one cent to the National Rehabilitation Service; one cent to the National Home; the remaining one and one-half cents for making the Buddy Poppy and other necessary expenses.





● The second nationwide appeal for funds for Muscular Dystrophy research is currently being conducted by the Muscular Dystrophy Associations of America, Inc. Leading the 1952-53 national campaign efforts is Justice William O. Douglas, Supreme Court of the United States, who is serving as honorary national chairman for the appeal. Dean Martin and Jerry Lewis will serve as national co-chairmen. At this time, 89 member chapters of the Muscular Dystrophy Associations of America, Inc., throughout the nation are joining together in a united crusade to raise funds necessary to the continuation and increasing of Muscular Dystrophy research.

● More than 100,000 persons in the United States are now victims of this progressive, muscle-wasting disease for which, at present, there is no known treatment or cure. The majority of those afflicted are youngsters, most of whom will not live beyond adolescence unless a cure is found.

● The Muscular Dystrophy Associations of America, Inc., was established two years ago for the purpose of fostering medical research to find effective treatment and cure for this long neglected disease. As a result of the first nationwide appeal held in 1951, muscular dystrophy research projects have been established in 17 laboratories in the United States and abroad. It is imperative that these projects be continued, and that more research work be established on a larger scale to accelerate progress toward discovery of a cure.

● To the thousands and thousands of afflicted persons and their families, the current appeal for funds for research contains the only hope for active productive lives. Contributions should be sent to local M.D.A. Chapters, or to M.D.A., New York 8, N. Y.

Announcing Publication of

SADLER'S PRACTICE OF PSYCHIATRY

Sadler's newest book had two predecessors—*Theory and Practice of Psychiatry* (1936), and *Modern Psychiatry* (1945). Since then psychiatric progress has been so marked that he decided to rewrite the book rather than revise it, and to give it its new title as well.

In addition to bringing the text up to date, Sadler has added several entirely new features—notably, the new section dealing with the Attitudinal Pathoses. This is in accordance with the most recent organization of the attitudinal states into a diagnostic category with Dr. Thorne's suggested term "pathosis" as a proper designation for these preneurotic disorders.

Another addition is an entire section devoted to psychosomatic medicine, rather than the brief coverage given to this subject previously.

The discussion of psychologic testing has been expanded, presenting a description of several new tests.

The section on temperament has been rewritten and now presents the views of Sheldon in addition to those of Jung and others.

The book is an excellent and compact reference for diagnosis and immediate treatment—and will be useful to general practitioners, specialists and psychiatrists—in the problems of personality maladjustment, the pathoses, the neuroses, and the psychoses.

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GOLD PLATINUM—Gold Color

Gold Platinum Wire has been proving its merits for all types of arches and springs for more than a quarter century. It's easy working, strong, tough, springy, and doesn't "tire" or lose its elasticity while orthodontic treatments are in progress.

\$3.00 per dwt.

NO. 12 CLASP

A high grade wire with physical properties that rival closely those of the highest priced orthodontic wires. It's almost as strong as the strongest, moreover, it is very tough and elastic, and an exceptional arch wire.

\$2.80 per dwt.

S. S. WHITE METALBA BRAND BAND MATERIAL

A high-fusing, non-tarnishing all precious metal, medium hard band material, costing little more than base metal products. It's easy working, tough, and has good strength—sufficient for all orthodontic purposes. Metalba Band Material requires no particular heat treatment. It is high fusing and gold solder of any fineness may be used with it.

\$2.40 per dwt.

ALL MADE IN POPULAR GAGES AND WIDTHS

Prices subject to change

THE S. S. WHITE DENTAL, MFG. CO., 211 S. 12th STREET, PHILADELPHIA 5, PA.
